

A REVISION OF THE ETHIOPIAN DREPANIDAE  
(LEPIDOPTERA)



BY

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## SYNOPSIS

This paper deals with the known Drepanidae of the Ethiopian Region (*sensu* Wallace, 1876) i.e. Madagascar, and Africa south of the Sahara. Each of the eight previously described genera of Oretinae endemic to this Region has been fully revised, and three new genera described. A new subfamily, Nidarinae, has been erected for the Madagascan genus *Nidara*. The three African species of *Callidrepana* Felder (Drepaninae) have also been dealt with. 39 new species and four new subspecies are described. A short account is given of the distribution of the Drepanidae in the Ethiopian Region and the geographical distribution of the subfamilies of Drepanidae is discussed. An attempt has also been made to characterize the three known subfamilies on a world basis.

## MATERIAL EXAMINED

THE holotypes or syntypes or nearly every Ethiopian nominal species have been examined. The only exceptions are the types of *Callidrepana brunneola* Holland, *Callidrepana oculata* Holland, *Ancistrotia bimaculata* Holland, *Ancistrotia geometroides* Holland, *Thymistida erosa* Holland and *Thymistida miserrima* Holland, which were dissected, drawn and photographed for me by Dr. H. K. Clench of the Carnegie

Museum. A lectotype has been selected from each syntypic series, and a neotype selected for *Nidara croceina* Mabille and for *Drepana tetrathyra* Mabille.

In addition to the collection of Drepanidae in the British Museum (Natural History), important material was borrowed from the following museums and institutions:

Carnegie Museum, Pittsburgh, U.S.A. ; Coryndon Museum, Nairobi, Kenya ; Durban Museum, South Africa ; Institut d'Enseignement et de Recherches tropicales, Bondy, France ; Institut de Recherche scientifique à Madagascar, Tananarive ; Institut für Spezielle Zoologie und Zoologisches Museum der Humboldt Universität, Berlin, D.D.R. ; Muséum d'Histoire naturelle, Geneva, Switzerland ; Muséum national d'Histoire naturelle, Paris, France ; Musée Royal de l'Afrique centrale, Tervuren, Belgium ; National Museums of Southern Rhodesia, Bulawayo ; Naturhistorisches Museum, Vienna, Austria ; Naturhistoriska Riksmuseet, Stockholm, Sweden ; Senckenbergische Naturforschende Gesellschaft, Frankfurt a.M., Germany ; Transvaal Museum, Pretoria, South Africa.

The examined material of each species is listed fully. The data is divided into sections according to the museum or institution containing the specimens concerned.

#### ACKNOWLEDGEMENTS

My sincere thanks are due to Dr. P. Viette, who suggested that I studied the Madagascan material preserved in the Muséum national d'Histoire naturelle, Paris. I should also like to thank Dr. P. Réal, who first indicated to me the need for a revision of the Drepanidae of Africa and arranged the loan of material from his institute. Mr. R. H. Carcasson, Dr. E. Pinhey and Dr. L. Vari gave valuable help regarding African localities as well as lending me much useful material. I am grateful to the Trustees of the Coryndon Museum, Nairobi, for the presentation of several important specimens. Dr. H. K. Clench very kindly prepared for me drawings and photographs of types under his care and lent me other important material. Dr. R. Pujol was kind enough to lend me the useful material collected by him during periods of duty in Africa. Dr. B. J. MacNulty presented some important specimens to me from his private collection. I am also greatly indebted to the following specialists, who have helped mainly by selecting material for me from their respective institutions : Dr. L. A. Berger, Dr. C. Besuchet, Dr. P. A. Clancey, Dr. D. Duckworth, Dr. E. Franz, Dr. P. Griveaud, Dr. H. Hannemann, Dr. B. Hanson, Dr. F. Kasy and Dr. P. Malzy. My colleagues in London have been a constant source of help at every stage in the work. I am especially indebted to Dr. I. W. B. Nye and Mr. P. E. S. Whalley who read the manuscript and made numerous helpful suggestions. The drawings initialled "A.S." were prepared by the Department's artist Mr. Arthur Smith, those initialled "J.E.S." by Mrs. J. E. Saunders.

#### SUBFAMILY CLASSIFICATION

It is proposed to give a fuller treatment of the subfamilies of Drepanidae at a later date in a revisionary catalogue of the world genera. However, as both of the

previously accepted subfamilies of Drepanidae (see Inoue, 1962) occur in Africa, and a new Madagascan subfamily, Nidarinae, is described in this paper, the most readily distinguishable features of each subfamily have been tabulated below. The Drepaninae as defined below comprise those genera listed by Gaede (1931) on pages 4 to 40 (from *Macrauzata* to *Campylopteryx*), and the Oretinae the genera listed on pages 40 to 53 (excepting *Sophta* Walker, *Nidara* Mabille and *Eudeilinia* Packard). The type material of nearly every known species of Drepaninae has been examined with regard to the diagnostic characters used below. It is worth noting that contrary to previous statements by Strand (1911 : 204) and Imms (1957 : 561) the species of *Cilix* Leech, as in all other Drepaninae, possess a well developed proboscis in both sexes and a frenulum in the male. *Deroca* Walker and *Phalacra* Walker, both Drepaninae species, which were stated by Strand (1911 : 203) to lack a frenulum in the male, in fact possess one, and *Oreta* Walker, as in nearly all Oretinae, has a vestigial proboscis in which the two halves are short and not fused to each other medially.

|                             | Drepaninae              | Oretinae            | Nidarinae |
|-----------------------------|-------------------------|---------------------|-----------|
| Proboscis                   | present, well developed | vestigial or absent | vestigial |
| Frenulum (♂)                | present                 | absent              | present   |
| Epiphysis of fore tibia     | present                 | present             | absent    |
| Spurs of mid and hind tibia | present                 | present             | absent    |

#### DISTRIBUTION AND AFFINITIES

The most striking fact concerning the distribution of Drepanidae in the Ethiopian Region is the poor representation of the subfamily Drepaninae. Ten endemic genera of Oretinae, comprising 62 species, are known to occur in this Region, whereas only three species of Drepaninae belonging to one non-endemic genus have so far been taken. This contrasts with the distribution in the Oriental and Australasian Regions where 39 genera and 245 species of Drepaninae occur (Gaede, 1931 : 4-40 ; *Macrauzata* Butler to *Campylopteryx* Warren) together with 10 genera and 76 of Oretinae (Gaede, 1931 : 4-40 ; from *Spectroreta* Warren to *Amphitorna* Turner—excluding *Gonoreta* Warren). A new subfamily has been erected for an endemic Madagascan genus, *Nidara* Mabille.

#### Africa (south of the Sahara)

No African genus of Oretinae is closely allied to any genus occurring outside the Ethiopian Region, showing that the fauna has been isolated from the Oretinae of the Oriental Region for a considerable period. The extensive range and the high degree of morphological diversity of many genera of African Oretinae suggests that they are long-established as such. *Epicamptoptera* Bryk, for example, extends across much of West, Central and East Africa, as far as Cape Province in southern Africa, and also into Madagascar. It can be divided into three, or perhaps four, morphologically distinct species-groups. *Spidia* Butler is also widespread and may be ancestral to the Madagascan *Crocini*s Butler. It exhibits considerable specific

diversity in the structure of the antennae, the shape of the wings, and the form of the male and female genitalia. *Isospidia* gen. n. and *Uranometra* Bryk are possibly monophyletic with *Spidia*. The distribution of *Negera* Walker is also extensive, and it too exhibits considerable specific diversity in the shape of the wings and genitalia. *Gonoreta* has a wide distribution in Africa and is also known from Madagascar, suggesting a past history comparable with that of *Epicampoptera*, although there is much less structural difference between its species than between species of *Epicampoptera*. The Madagascan genus *Gonoretodes* may be an offshoot from *Gonoreta*.

There are insufficient records for conclusions to be drawn regarding the exact limits of distribution, but in general these approximately coincide with the boundaries of the rain-forest and montane forest regions. Certain species, however, are able to tolerate less moist conditions at least during part of the year and may occur in areas of woodland and forest-savanna; but without accurate ecological data it is not possible to be certain whether a given specimen from, say, Uganda was taken in woodland or forest-savanna or from an isolated patch of rain-forest within the latter. The species of *Spidia*, for example, are known mainly from the rain-forest areas of the Congo Basin and West Africa, but with one species, *goniata* Watson, apparently restricted to the montane forests of Ruwenzori. *Gonoreta opacifinis* sp. n. has a distribution in West Africa and the Congo Basin similar to that of *Spidia*, but also occurs, without apparent geographic variation, in the Kalinzu forest (rain-forest) of south-western Uganda and in thick woodland in the Vumba Mountains, Southern Rhodesia. *Gonoreta subtilis* Bryk is also widely distributed in the rain-forest regions of tropical Africa, extending from Sierra Leone to the Usambara Mountains of Tanganyika: in this species the West African populations are subspecifically distinct from the remainder, whereas in *Isospidia angustipennis* Warren the boundary between its two subspecies lies near the eastern edge of the main rain-forest belt of the Congo Basin.

Maps 1-7 show the distribution of 42 of the 48 African species of Drepanidae. Each symbol on the maps indicates the collection of one or more specimens of a particular species. It is noteworthy that 40 of the species are either confined to the main rain-forest belt (and bordering savanna) of central Africa or have ranges including central Africa. The range of the polytypic *Negera natalensis* Warren which extends from Senegal to Cape Province is particularly extensive. Apart from *Negera natalensis* only *Epicampoptera notialis* sp. n. is known to occur in South Africa. Both species seem to be confined here to the belt of forest-savanna along the east coast. Five species are confined to West Africa and two to East Africa.

Only one genus of the subfamily Drepaninae is present in Africa. This is *Callidrepana* Felder, a genus of about twenty-five species, otherwise known from the Oriental and Australasian Regions and from the south-east corner of the Palearctic Region. The three African species, none of which have been captured east of the Great Rift Valley, are probably quite closely allied to three of the Oriental species of *Callidrepana*. This suggests the relatively recent existence of a continuous distribution connecting the African and Oriental Drepaninae.



## Madagascar

Six genera of Oretinae, including 22 species, are present in Madagascar. Two of these, *Epicamptoptera* and *Gonoreta*, are mainly African in distribution but are represented by three and one species respectively in Madagascar. The remaining four genera are endemic to Madagascar. *Crociniis* is closely allied to the endemic African genus *Spidia* and may have been derived from it; *Gonoretodes* probably has similar affinities with *Gonoreta*. Without more evidence it is difficult to decide whether the two species-groups of *Crociniis* are the result of divergence from a single ancestral stock probably originating in Africa or whether the two groups are derived from two separate invasions from Africa. The affinities of the monotypic *Archidrepana* Warren are obscure; it seems to have no particularly close relative in either Madagascar or Africa. *Oretopsis* gen. n. is possibly most closely related to the Austro-oriental *Oreta* Walker and *Psiloreta* Warren, and may be a relict of a once continuous fauna extending through Africa to India.

No Drepaninae are known to occur in Madagascar.

A new subfamily has been established for the endemic *Nidara* Mabille.

Most of the species of Madagascan Drepanidae are known only from very short series, and conclusions concerning their distribution in the island can not yet be drawn, although the available data suggests that at least some of the species may be restricted to humid, forested regions.

## TREATMENT

Those species not fully described in the original description have been redescribed. The following characters have been used: length and colour of the labial palps; degree of development of the proboscis; shape of clypeo-frons; colour and shape of antennae (see note on antennal pectination ratio below); colour of thorax, legs and abdomen; presence or absence of tibial spurs and of fore tibial epiphysis; shape, size, coloration, colour-pattern and venation of wings; presence or absence of brush-organs in the abdomen; presence or absence of a frenulum on the male hind wing; structure of the male and female genitalia. Because of the high degree of individual variation and the tendency of many pigments to fade, generalized colour-terms such as "reddish brown", "scarlet" and "pink" have been used in preference to a more accurate method of colour description based on a colour-atlas.

Wing measurements are given in the following form: mean of measurements taken (measured from apex of fore wing to centre of mesoscutum, with anal margin of wing at right-angles to longitudinal axis of thorax); range of measurements taken; and, in brackets, the number of specimens measured. The length of the pectinations of the antennae is expressed as a percentage: A.P.R. (antennal pectination ratio) = 
$$\frac{\text{length of longest antennal pectination} \times 100}{\text{total length of antenna}}$$

The genitalia of both sexes (where known) of every Ethiopian species have been illustrated. The drawings of the male genitalia of one species of each genus have been labelled according to the terms used in the corresponding generic description



- 10 Outer margin of fore wing with angulate process at middle (Plates 7 and 8, figs. 295-304) . . . . . **GONORETA** (p. 70)  
 - Outer margin of fore wing without process at middle . . . . . 11
- 11 Fore wing without areole ; colour-pattern of wings as in Plate 17, fig. 339 ; male genitalia highly diagnostic, medial process of gnathus extending posterior to uncus (Text-figs. 237-239) ; female genitalia as in Text-fig. 236 . . . . . **ORETOPSIS** (p. 145)  
 - Fore wing with areole ; colour-pattern of wings not as above ; genitalia not as above, gnathus of male not extending posterior to uncus . . . . . 12
- 12 Antenna unipectinate, or if unilamellate then hind wing with conspicuous reddish brown spot at end of cell on upper surface ; one or more hyaline patches usually present at end of cell ; outer angle of hind wing rounded or sharply angled (Plates 9 and 10, figs. 305-311) ; genitalia as in Text-figs. 154-187 **SPIDIA** (p. 94)  
 - Antenna unilamellate ; hind wing without large brown spot or hyaline patches at end of cell ; outer angle of hind wing rounded (Plate 14, figs. 326-330) ; genitalia as in Text-fig. 219-227 . . . . . **ISOSPIDIA** (p. 132)

## ORETINAE

### EPICAMPOPTERA Bryk

(Text-figs. 1-73 ; Pls. 1-4, 17, figs. 271-286, 342 ; Maps 1, 2)

*Epicamoptera* Bryk, 1913 : 7. Type-species, by original designation, *Thymistida erosa* Holland, 1893.

*Epicamoptera* Bryk ; Gaede, 1927 a : 163.

*Epicamoptera* Bryk ; Gaede in Seitz, 1927 b : 290.

*Epicamoptera* Bryk ; Gaede, 1931 : 52.

*Epicamoptera* Bryk ; Leroy, 1936 : 3.

*Epicamoptera* Bryk ; Pujol, 1960. [Biological notes.]

*Metadrepana* Hampson, 1914 : 104. Type-species, by original designation, *Metadrepana glauca* Hampson, 1914.

DIAGNOSIS. The bipectinate antennae and the shape of the hind wing distinguish *Epicamoptera* from *Gonoreta*, the only other African genus likely to be confused with it. The similarly shaped antennae, the presence of a globose clypeo-frons, and similarities in the colour-pattern suggest affinities between *Epicamoptera* and *Negera*, but the shape and venation of the wings together with the distinctive genitalia readily separate them.

DESCRIPTION. ♂, ♀. Labrum globose ; antenna bipectinate from base to apex ; proboscis vestigial.

Meso- and metathoracic legs with single pair of short terminal spurs. Outer margin of fore and hind wing produced between  $M_3$  and  $Cu_{1a}$  (see plates). Venation of fore wing as in Text-figs. 1, 3.  $Sc + R_1$  anastomoses with  $R_s$  for short distance distal to end of cell (see Text-fig. 2). Upper surface of both wings brown ; base of fore wing, area distal to postmedial fascia, and irregular medial patch, paler than rest of wing ; subterminal represented in both wings by well defined interneural spots between  $M_3$  and  $Cu_{1a}$ , less strongly marked spot between  $Cu_{1a}$  and  $Cu_{1b}$ , and an additional marking in hind wing between  $M_2$  and  $M_3$ . Under surface of both wings paler than upper surface, variously striate with darker brown ; discocellular spot usually well marked ; postmedial fascia present on both wings, sometimes weakly marked on hind wing ; the hind wing fascia not corresponding in position with same fascia on upper surface. (See Plates 1-3, and Plate 17, fig. 342.)

Male abdomen with brush organ immediately posterior to tympanum (see Text-fig. 4).

GENITALIA (see notes below under species-groups). Of particular interest in the male are the peculiar sacs in the uncus of the species group *seydeli*, and the pouch-like diaphragma of the group *erosa* : in these groups and in *strandi* the eighth abdominal sternum is greatly modified to form part of the genital apparatus. The peculiar genitalia of *efulena* are dealt with on page 47.



**TAXONOMIC HISTORY.** *Epicamptoptera* was erected by Bryk (1913 : 7) for *Thymistida erosa* Holland (selected by Bryk, 1913 : 7, as type-species) and a new species *strandii*. The following year Hampson (1914 : 104) erected the genus *Metadrepana* for two new species *glaucia* and *heterogyna* and selected *glaucia* as the type-species. Tams (1925 : 289-291) described *andersoni* and *pallida* as two new species of *Metadrepana* and later (1930 : 74) added *marantica*. Gaede (1927 a : 163) first synonymized *Metadrepana* Hampson, 1914, and *Epicamptoptera* Bryk, 1913, and described *heringi*. Gaede (1927 b : 290) in the first revision of *Epicamptoptera* listed *erosa*, *strandii* (synonym : *glaucia*), *heterogyna*, *andersoni*, *heringi* and *pallida*. Gaede (1931 : 52) in a catalogue of *Epicamptoptera* listed the same species as in Seitz but added *Thymistida miserrima* Holland (see below). Hering (1934 a : 400-405) added *difficilis*, *ignorata* and *vulvornata* and through a misunderstanding sank *marantica* as a junior synonym of *strandii*. Later in the same year Hering (1934 b : 407) corrected the above synonymy, and sank *ignorata* as a junior synonym of *marantica*.

Through the kindness of Dr. H. K. Clench I have been able to examine drawings of the genitalia and photographs of the holotype of *Thymistida miserrima* Holland. This species clearly does not belong in *Epicamptoptera* and has been transferred to *Spidia* (see page 112). The species *carnea* has been taken from synonymy in the genus *Ctenogyna* Felder and transferred to *Epicamptoptera* (p. 36). Various changes in specific nomenclature have been made and nine new species have been described in the present revision. *Epicamptoptera* now comprises nineteen species.

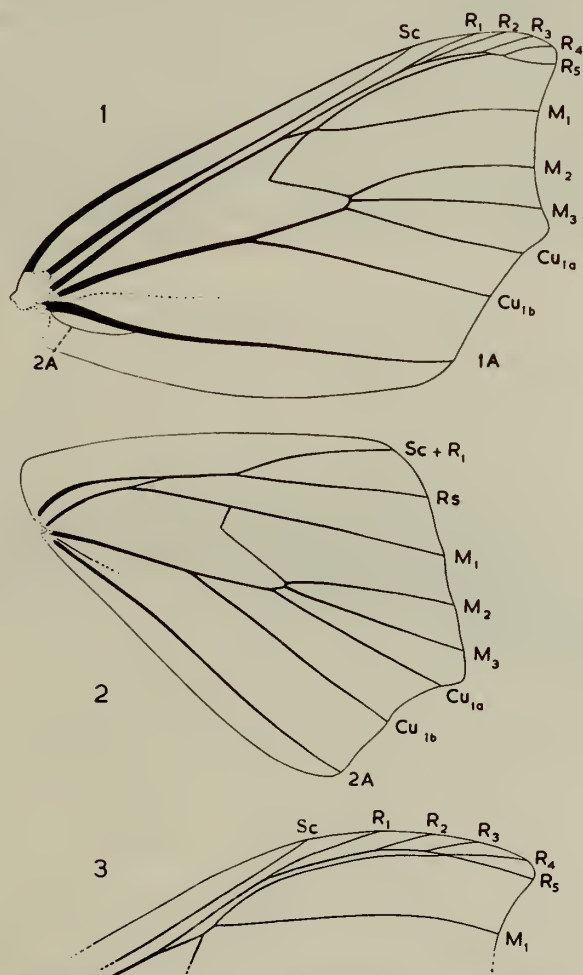
**DISTRIBUTION** (Maps 1 and 2). *Epicamptoptera* is widely distributed in both Africa and Madagascar. Three species are endemic to Madagascar and sixteen to Africa. The genus has been taken in much of the forested regions of West Africa and the Congo Basin from Guinea to the Great Rift Valley, and also in smaller tracts of rain-forest and montane forest in Uganda and Kenya. Only one species, *notialis*, occurs in South Africa, where it is apparently restricted to parts of Transvaal and the coastal forest-savanna of Natal and Cape Province. Although several African species are known to feed on *Coffea* (see Pujol, 1960), and might therefore be expected to occur wherever *Coffea* is grown, those plantations of *Coffea* not close to areas of moist forest are, according to Pujol, practically never attacked.

**SPECIES-GROUPS.** With the exception of *efulena* (see Key below) the genus is divisible into three distinct species-groups : species-group *strandii* (p. 12) containing the species *strandii*, *marantica*, *andersoni*, *tamsi*, *difficilis* and *ivoirensis* ; species-group *erosa* (p. 28) which includes *notialis*, *heringi*, *heterogyna*, *erosa*, *pallida*, *robusta*, *tumidula*, *graciosa*, *carnea* and *griveaudi* ; and species-group *seydeli* (p. 43) containing the species *seydeli* and *lumaria*. In the male genitalia of the species-group *strandii* the uncus is distinctively shaped, each lobe possessing a short, beak-like, medial process ; the valves are moderately well-developed, flat and somewhat hood-like and without acuminate basal processes ; the diaphragma is strongly concave ventrally but not pouch-like ; and the eighth sternum is highly modified, with stout apodemes and long, curved, paired, posterior processes. The male genitalia of the group *erosa* differ in the shape of the uncus ; the very small valves,



which have heavily sclerotized, curved, basal spines; the curious pouch-like diaphragma which extends anteriorly over the saccus; and the eighth sternum which has more slender apodemes than in *strandii* and shorter posterior arms. The remaining group, *seydeli*, possesses peculiar invaginate sacs in the uncus, an almost flat diaphragma, thickly setose valves, a truncate saccus, a distinctively shaped aedeagus, and a most unusual, asymmetric arrangement of sclerites in the eighth sternal region and in the membrane between this and the ninth sternum.

The groups *strandii* and *erosa* can also be separated by the shape of the signum in the female genitalia. The signum is a small, spinose, bilobed patch in *strandii*, whereas in *erosa* it is an elongate, folded band, tapered at each end. There is a single female from Fernando Po (see page 45), which I can only tentatively identify as a specimen of the species *lumaria*, in which the signum resembles that in the species-group *strandii*.



FIGS. 1-3, *Epicampoptera*, venation. 1-2, *tumidula*, ♂; 3, *strandii strandii*, ♂.

KEY TO SPECIES-GROUPS AND TO THE SPECIES *efulena*

## MALES

- 1 Fore wing venation as in Text-fig. 3. Male genitalia (e.g. Text-figs. 9, 10, 17, 19) : valves without basal process ; diaphragma strongly concave but not extended anteriorly above saccus ; eighth sternum with long, curved, paired posterior processes . . . . . **species-group *strand*** (p. 12)
- Fore wing venation as in Text-fig. 1. Posterior processes of eighth sternum short (e.g. Text-figs. 32, 59, 66, 73) . . . . . 2
- 2 Male genitalia : vinculum produced posterolaterally on either side into heavily sclerotized, trifurcate, claw-like structure ; uncus absent . . . . . ***efulena*** (p. 45)
- Male genitalia ; vinculum without trifurcate structures posterolaterally ; uncus present . . . . . 3
- 3 Male genitalia : heavily sclerotized, curved, acuminate process present at base of valve ; pouch-like diaphragma extended anteriorly above saccus ; uncus without sacs . . . . . **species-group *erosa*** (p. 28)
- Male genitalia : without valve process ; diaphragma nearly flat ; each lobe of uncus with invaginate sac . . . . . **species-group *seyd*** (p. 43)

SPECIES-GROUP *strand*

DIAGNOSIS. Fore wing venation as in Text-fig. 3. Hind wing as for *erosa* (Text-fig. 2). ♂ GENITALIA : each lobe of uncus with beak-like, medial process ; valve broad and flattened, divided in *strand* ; diaphragma concave ventrally ; aedeagus lipped or spined at apex ; eighth sternum with stout apodemes and long, curved, posterior processes, often not bilaterally symmetrical ; eighth abdominal tergum with short apodemes. ♀ GENITALIA : signum cordate, ovate or triangular.

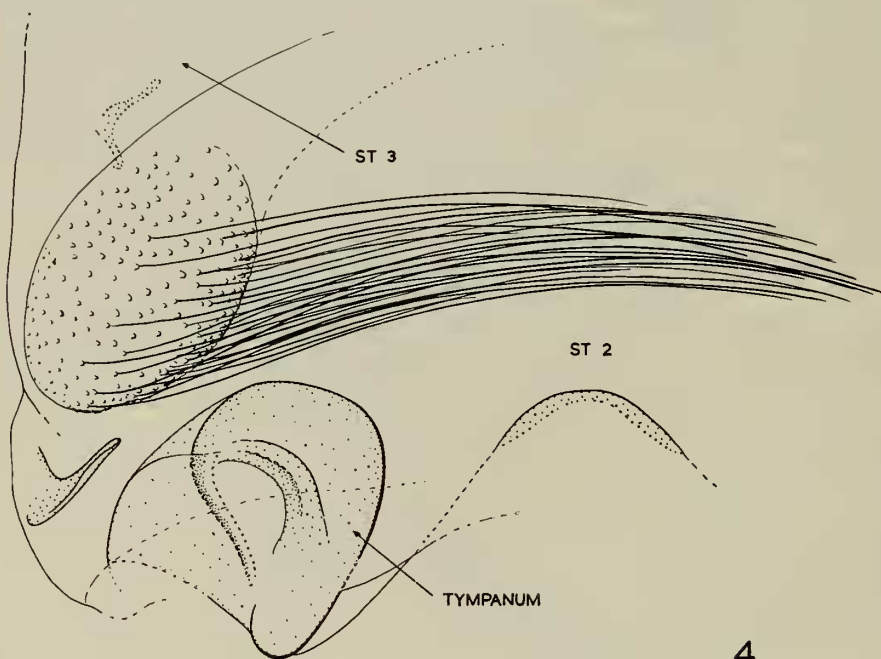


FIG. 4, *Epicampoptera strandi glauca*, ventral view of left side of second abdominal segment, ♂

DISCUSSION. This group of six species includes one polytypic species *strand*i containing two subspecies. The particularly wide distribution of *marantica* (see Map 1) is noteworthy. *E. tamsi* and *andersoni* form a superspecies: had there been no overlap in their ranges it would have been reasonable to treat them as subspecies of a single species. The species *difficilis* and *ivoirensis* probably constitute another superspecies. Three species, *andersoni*, *marantica* and *strand*i, are known to be defoliators of coffee (see Pujol, 1960).

#### KEY TO SPECIES MALES

- 1 Genitalia with bilobed valve; posterior processes of eighth sternum sigmoid (Text-figs. 5, 6, 9-11) . . . . . *strand*i (p. 13)
- Genitalia with simple valve; posterior processes of eighth sternum not sigmoid . . . . . 2
- 2 Outer margin of fore wing very strongly notched between  $Cu_{1a}$  and  $Cu_{1b}$  (Plate 2, fig. 275); genitalia with angulate valve and distinctly shaped eighth sternum (Text-figs. 12, 14) . . . . . *marantica* (p. 17)
- Outer margin less strongly notched than above between  $Cu_{1a}$  and  $Cu_{1b}$  (e.g. Plate 2, fig. 277); valve not angulate; medial process of eighth sternum absent or nearly so . . . . . 3
- 3 Genitalia as in Text-figs. 17-19 . . . . . *andersoni* (p. 19)
- Genitalia not as in Text-figs. 17-19 . . . . . 4
- 4 Genitalia as in Text-figs. 20-22 . . . . . *tamsi* (p. 22)
- Genitalia not as in Text-figs. 20-22 . . . . . 5
- 5 Genitalia as in Text-figs. 28-30 . . . . . *ivoirensis* (p. 26)
- Genitalia as in Text-figs. 24-26 . . . . . *difficilis* (p. 24)

#### *Epicamptoptera strand*i Bryk

(Text-figs. 5-11; Pl. 1, figs. 271, 272; Map 1)

*Epicamptoptera strand*i Bryk, 1913: 8.

*Epicamptoptera strand*i Bryk; Gaede in Seitz, 1927 b: 291. [Poor fig.]

*Epicamptoptera strand*i Bryk; Gaede, 1931: 52.

*Epicamptoptera strand*i Bryk; Pujol, 1960: 4. [Figs. of eggs, larvae and resting adult.]

*Epicamptoptera vulvornata* Hering, 1934 a: 404. **syn. n.**

DIAGNOSIS. ♂, ♀. The only distinctive external character is the usually very pale, conspicuous postmedial fascia on the hind wing (Plate 1, figs. 271, 272) which contrasts with the less well marked or dark brown fascia of the remaining species of this group. GENITALIA. ♂ (Text-figs. 5, 6, 9-11): eighth sternum remarkably contorted; saccus globose; valve bilobed. ♀ (Text-figs. 7, 8): with distinctive convoluted ostial plate.

MEASUREMENTS. A.P.R.: ♂, ♀. 17. Wing: (See subspecies).

DISCUSSION. Similar to *marantica* externally but separable from it by the less strongly produced male hind wing, the paler postmedial fascia on the hind wing of both sexes, and by the genitalia.

Two subspecies are known. A single female from Uganda (in the Coryndon Museum, Nairobi) may represent a third subspecies but further material is needed before this can be confirmed.

There is considerable variation in the coloration of this species. The ground-colour of the upper surface of the wings may vary from reddish brown (holotype) to dull grey. The subterminal spots are absent in some specimens.

The colour-plate of this species in Seitz (Gaede, 1927 b : pl. 41f) is inaccurate and misleading.

DISTRIBUTION (Map 1). The species *strandi* occurs in GUINEA, UGANDA, and in most of the intervening territories.

MATERIAL EXAMINED. Type. Holotype ♂ (not ♀ as stated in the original description), CAMEROUN, Victoria, Kriegsschiffhafen ; Drepanidae genitalia slide No. 1250 ; in the Zoologisches Museum, Berlin.

Other material. (See subspecies.)

***Epicamptoptera strandi strandi* Bryk**

(Text-figs. 5-7 ; Pl. 1, figs. 271, 272 ; Map 1)

*Epicamptoptera strandi* Bryk, 1913 : 8.

*Epicamptoptera strandi* Bryk ; Gaede in Seitz, 1927 b : 291. [Partim.]

*Epicamptoptera strandi* Bryk ; Gaede, 1931 : 52.

*Epicamptoptera strandi* Bryk ; Pujol, 1960 : 4.

*Epicamptoptera vulvornata* Hering, 1934 a : 404.

DIAGNOSIS. ♂, ♀. The shape of the valves and uncus in the male, and the ostial plate of the female genitalia readily distinguish the nominate subspecies from *glauca*. (See Text-figs. 5-7.)

MEASUREMENTS. Wing : ♂. 22.5, 18.0-24.5 mm. (8) ; ♀. 24.5, 23.0-26.0 mm. (10).

DISTRIBUTION (Map 1). Known from the CENTRAL AFRICAN REPUBLIC, GABON and the CONGO. A single male from UGANDA in the Coryndon Museum may prove to belong to this subspecies when more material is available for comparison.

MATERIAL EXAMINED. Types. Holotype ♂ of *strandi* (see species description). Holotype ♀ of *vulvornata* Hering, CONGO, Uele-Itimbiri, Dembia, 10.xi.1933 (Leroy) ; Drepanidae genitalia slide No. 1286 ; in the Musée Royal de l'Afrique centrale, Tervuren.

Other material. *British Museum (Natural History)*. CENTRAL AFRICAN REPUBLIC : 1 ♂, 2 ♀, Boukoko (Réal). *Musée Royal de l'Afrique centrale, Tervuren*. CONGO : 1 ♂, 4 ♀, Stanleyville, Yangambi, 10.x.1959 (Decelle) ; 1 ♂, Yalusaka, 1936 (Ghesquière). *Institut d'Enseignement et de Recherches tropicales, Bondy*. CENTRAL AFRICAN REPUBLIC : 3 ♂, 5 ♀, Boukoko M'baiki, viii.1948, 2.vii-10.xii.1949, vii.1960 (Réal, Bruniquel). *Muséum national d'Histoire naturelle, Entomologie agricole tropicale, Paris*. GABON : 2 ♂, Oyem, iii.xi.1949 (Rougeot) ; 1 ♂, Mayumba, i.1953 (Rougeot). CENTRAL AFRICAN REPUBLIC : 7 ♂, 4 ♀, Boukoko, 5-21.x.1962 (Pujol).

***Epicamptoptera strandi glauca* Hampson ssp. rev.**

(Text-figs. 8-11 ; Map 1)

*Metadrepana glauca* Hampson, 1914 : 105.

*Metadrepana glauca* Hampson ; Tams, 1925 : 289.

*Epicamptoptera strandi* Bryk ; Gaede in Seitz, 1927 b : 291. [Partim.]

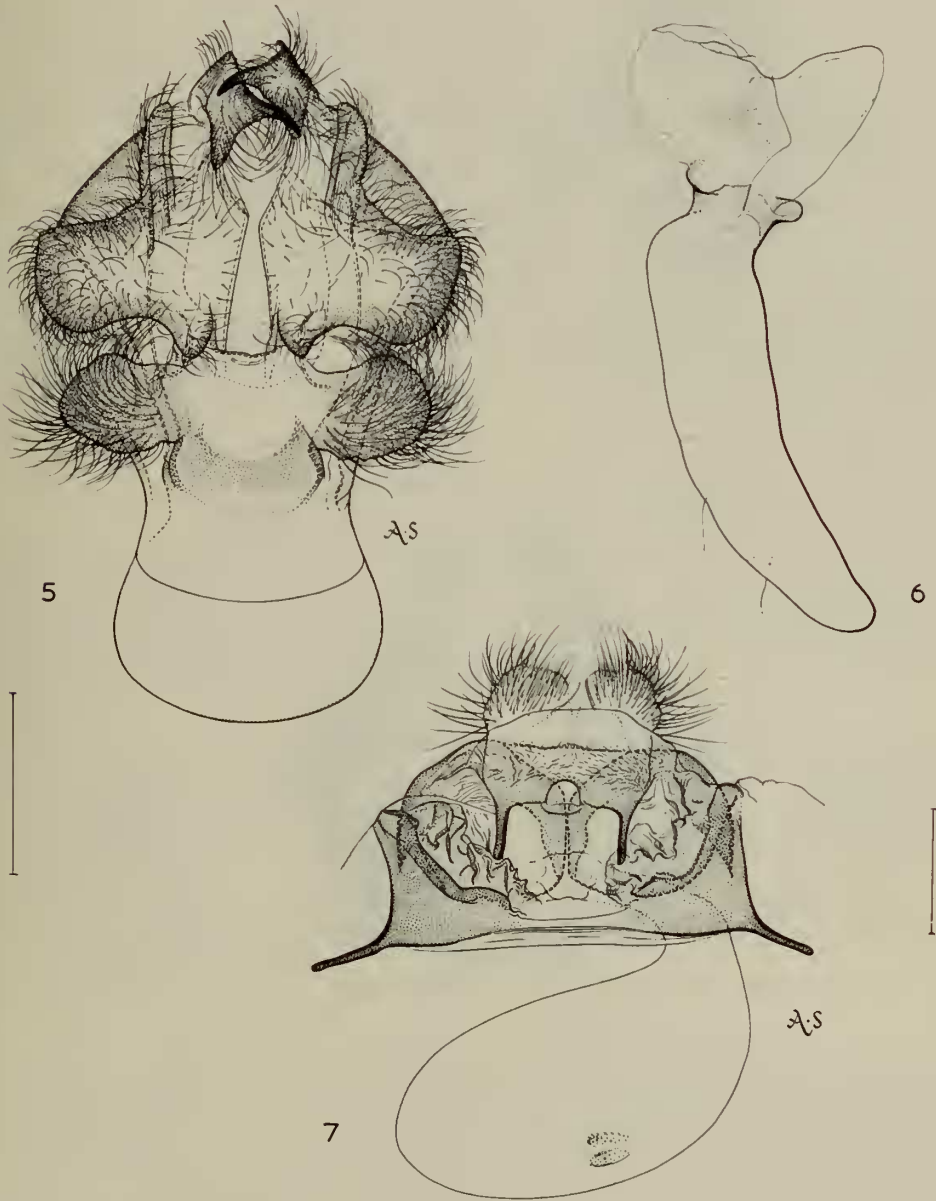
*Epicamptoptera strandi* Bryk ; Gaede, 1931 : 52. ["var. *glauca*".]

*Epicamptoptera strandi* Bryk ; Hering, 1934 b : 407. [Partim.]

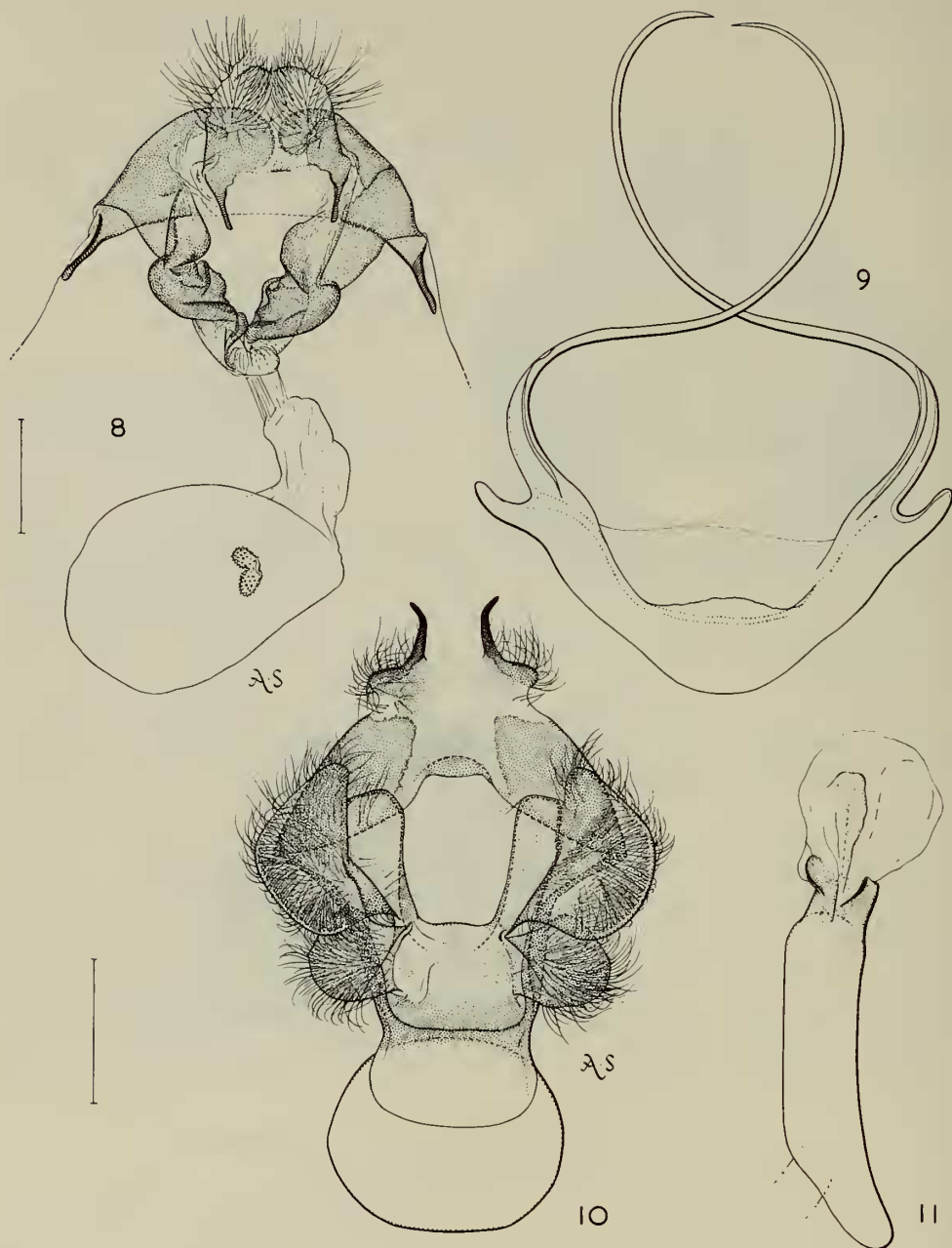


DIAGNOSIS. The shape of uncus lobes, valves and aedeagus in the male and the ostial plate in the female genitalia separate this from the nominate subspecies (see Text-figs. 8-11).

MEASUREMENTS. Wing ; ♂. 20.0, 18.0-22.5 mm. (14) ; ♀. 23.0, 21.0-25.5 mm. (14).



FIGS. 5-7, *Epicamptoptera strandi strandi*, genitalia. 5, ♂ ; 6, aedeagus ; 7, ♀.



FIGS. 8-11, *Epicampoptera strandi glauca*, genitalia. 8, ♀; 9, ♂ eighth abdominal sternite; 10, ♂; 11, aedeagus.

DISTRIBUTION (Map 1). FRENCH GUINEA, SIERRA LEONE, LIBERIA, IVORY COAST and NIGERIA.

MATERIAL EXAMINED. Type. I have selected the male from the pair of syntypes in the British Museum (Natural History) as the LECTOTYPE. It bears the following data: "Lagos, H. Strachan, 1904-7: *Metadrepana glauca* type ♂ Hampson; Drepanidae Genitalia slide No. 1251".

Paralectotype. ♀, NIGERIA, Lagos (Strachan).

Other material. *British Museum (Natural History)*. NIGERIA: 9♂, 8♀, Ibadan (Golding); 1♀ (Golding); 1♂, Lagos, xi.1955 (Boorman). IVORY COAST: 2♂, 1♀, Adiopodoumé, 29.viii, 15.xi.1959 (Réal). SIERRA LEONE: 2♂, Njala, on *Coffea excelsior*, 20.ix, 17.x.1937 (Hargreaves). *Institut d'Enseignement et de Recherches tropicales, Bondy*. IVORY COAST: 5♂, 1♀, Adiopodoumé, 29.i, 3.ix.1954, 8.iii.1956 (Réal). *Muséum national d'Histoire naturelle, Entomologie agricole tropicale, Paris*. GUINEA: 10♂, 8♀, Sérédou, 3-21.vi.1958, 30.x-7.xii.1959 (Pujol, Gaye). IVORY COAST: 3♂, 4♀, Bingerville (2♂, 1♀, U.V.), 20.viii-24.ix.1962 (Pujol); 2♂, Divo (1♂ U.V.) 4-6.x.1962 (Pujol). *Carnegie Museum, Pittsburgh*. LIBERIA: 2♂, Harbel, 12.v.1955, 9.i.1957 (Fox).

### *Epicampoptera marantica* (Tams)

(Text-figs. 12-15; Pl. 2, fig. 275; Map 1)

*Metadrepana marantica* Tams, 1930: 74. [Fig. ♂ genitalia.]

*Epicampoptera marantica* (Tams); Leroy, 1936: 3. [Half-tone figs. egg, larva, adult ♂.]

*Epicampoptera marantica* (Tams); Hering, 1934 b: 407. [Recalled from synonymy of *strandi*—see Discussion. First synonymy of *ignorata*.]

*Epicampoptera marantica* (Tams); Pujol, 1960: 4. [Biological notes.]

*Epicampoptera ignorata* Hering, 1934 a: 403.

DIAGNOSIS. ♂. Outer marginal process of fore wing particularly prominent, more so than in most specimens of *strandi* (Plate 2, fig. 275). Postmedial fascia when present on upper surface of hind wing darker than rest of wing, not paler as it is in *strandi*, *andersoni*, *tamsi* and *ivoirensis*.

♂ GENITALIA (Text-figs. 12-14): digitate uncus lobes and angulate valves characteristic; aedeagus with broad apical lips; eighth sternum with slender asymmetric lateral processes and conical medial process.

♀. Similar to male but outer marginal processes of both wings much smaller.

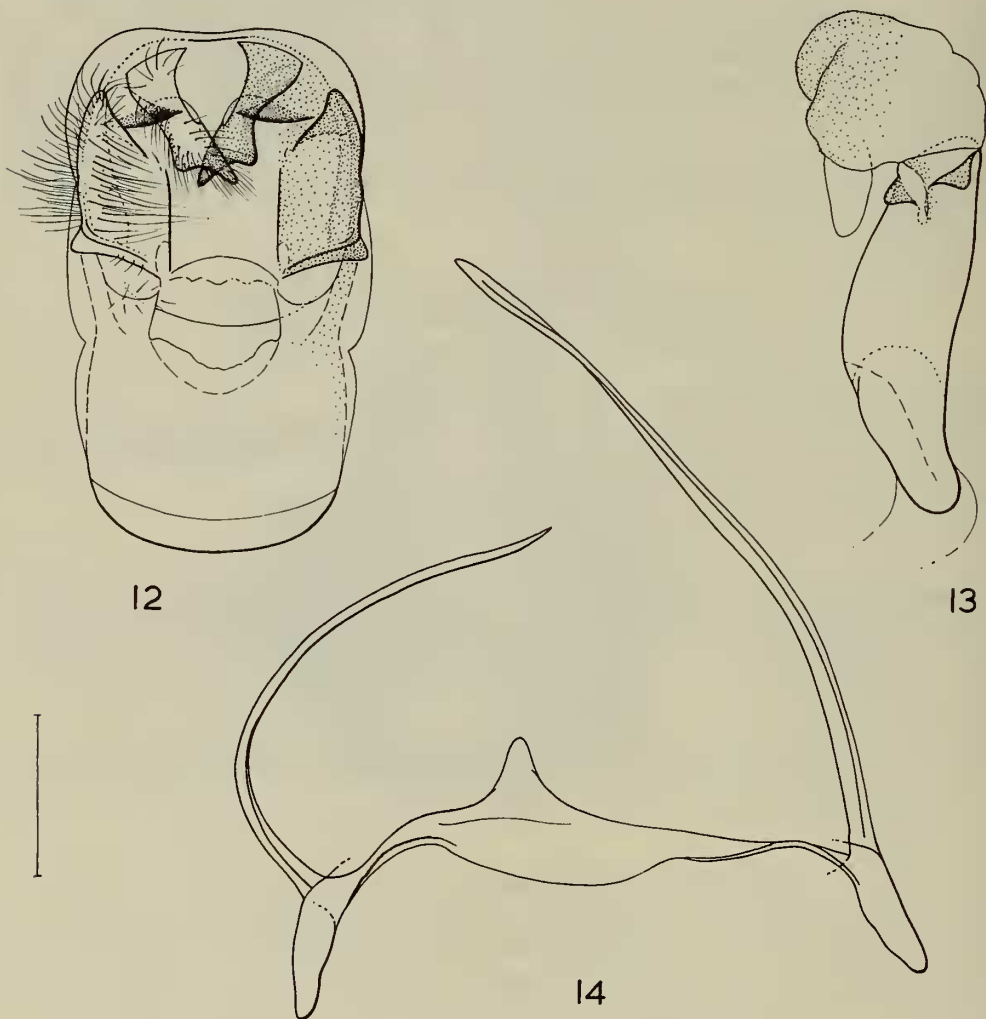
♀ GENITALIA (Text-fig. 15): signum approximately triangular; eighth segment strongly sclerotized, strongly bilobed dorsally.

MEASUREMENTS. A.P.R.: ♂, ♀, 18. Wing: ♂. 21.0, 17.5-23.0 mm. (16); ♀. 23.5, 20.0-27.0 mm. (15).

DISCUSSION. Distinguished from *strandi* by the dark postmedial fascia of the hind wing, the slightly more strongly produced outer marginal processes of the fore and hind wings, and by the distinctive male and female genitalia. Separated from the remaining species of this species-group by the much more strongly developed processes of the outer margin of the wings and by the genitalia. (The uncus can usually be seen without dissection by brushing away the scales at the end of the abdomen.)

Hering (1934 a : 400) incorrectly synonymized *marantica* as a junior synonym of *strandii*, but later corrected this (1934 b : 407) and at the same time correctly placed *ignorata* in the synonymy of *marantica*.

The coloration of this species is variable. The ground-colour of the upper surface of the wings may be one of many shades of reddish or greyish brown, with the area proximal to the postmedial fascia usually darker than the rest of the wing and often marked with irregular patches of white or pale grey. The subterminal spots on both wings are usually less well marked than in *strandii* and are sometimes absent. The holotype is an almost uniform pale reddish brown above, with a trace of the subterminal markings on the hind wings only.



FIGS. 12-14, *Epicamptoptera marantica*, ♂ genitalia. 12, ♂ ; 13, aedeagus ; 14, eighth abdominal sternite.



The extensive range of this species includes that of *ivoirensis*, *tamsi* and *andersoni* (see Map 1) all of which appear to be closely related to *marantica*.

DISTRIBUTION (Map 1). Known to occur in GUINEA, IVORY COAST, CONGO and UGANDA.

MATERIAL EXAMINED. Types. Holotype ♂ of *marantica*, UGANDA, Namenage, 20.iv.1916 (*Hargreaves*); Drepanidae genitalia slide No. 1132; in the British Museum (Natural History).

LECTOTYPE ♂ of *ignorata*, CONGO, Bambesa, 20.ix.1933 (*Leroy*); Drepanidae genitalia slide No. 1000 (I have selected this male syntype from the pair of syntypes in the Muséum Royal de l'Afrique centrale, Tervuren).

Other material. *British Museum (Natural History)*. UGANDA: 3 ♂ paratypes, 1 ♀ allotype, Kampala, 16.vii.1923 (*Hargreaves*); 6 ♂ and 7 ♀ paratypes, Kampala, 16, 18. vii.1928 (*Hancock*); 3 ♂ paratypes, Kampala; 1 ♂ and 1 ♀ paratypes, Bukalasa, 24, 26.v.1926 (*Hargreaves*); 3 ♂ paratypes, Namukekera, 18.vii.1928 (*Hancock*); 2 ♀ paratypes, Company's estate, vii.1928 (*Hargreaves*). *Musée Royal de l'Afrique centrale, Tervuren*. CONGO: 8 ♂, 17 ♀, Stanleyville, Yangambi, 31.viii, 1-2.ix.1959 (*Decelle*). *Institut d'Enseignement et de Recherches tropicales, Bondy*. IVORY COAST: 1 ♂, Adiopodoumé, 10.iii.1955 (*Réal*). CENTRAL AFRICAN REPUBLIC: 1 ♀, Boukoko M'baiki (*Réal*). *Muséum national d'Histoire naturelle, Entomologie agricole tropicale, Paris*. GUINEA: 1 ♂, Sérédou, 22.iv.1958 (*Gaye*); 1 ♀, Macenta, 8.ix.1953 (*Pujol*). CENTRAL AFRICAN REPUBLIC: 3 ♂, 6 ♀, Boukoko, 11.vi.1962 (*Pujol*). CAMEROUN: 5 ♂, 5 ♀, Foumbot, on *Coffea arabica*, 26.ix-9.xi.1962 (*Pujol*). *Coryndon Museum, Nairobi*. UGANDA: 1 ♂, 1 ♀, Toro, Bwamba, vi.1956 (*Carcasson*), ix.1961 (*Milton*); 1 ♂, Kampala, viii.1957 (*Hopkins*); 2 ♂, Masaka, Sango Bay, Katera, x.1960 (*Carcasson*); 3 ♀, Ankole, Kalinzu Forest, xi.1961 (*Carcasson*). KENYA: 1 ♀, Mt. Elgon, xi.1961 (*Jackson*).

### *Epicamptoptera andersoni* (Tams)

(Text-figs. 16-18; Pl. 1, figs. 273, 274; Map 1)

*Metadrepána andersoni* Tams 1925: 289.

*Epicamptoptera andersoni* (Tams); Gaede in Seitz, 1927 b: 291. [Misleading fig.]

*Epicamptoptera andersoni* (Tams); Gaede, 1931: 52.

*Epicamptoptera andersoni* (Tams); Hering, 1934 a: 401.

*Epicamptoptera andersoni* (Tams); Leroy, 1936: 6. [Description of larva.]

*Epicamptoptera andersoni* (Tams); Pujol, 1960: 4.

DIAGNOSIS. ♂. (Plate 1, fig. 273). Outer margin of both wings moderately (holotype) or weakly produced between  $M_3$  and  $Cu_{1a}$ . Subterminal markings usually present in both wings between  $M_3$  and  $Cu_{1a}$ , and often present, though less well marked, in the fore wing between  $M_2$  and  $M_3$ , and  $Cu_{1a}$  and  $Cu_{1b}$ , and in the hind wing between  $M_2$  and  $M_3$ . As in *strandi* the postmedial fascia, when present on the hind wing, is usually lighter in colour than the ground-colour of the wing.

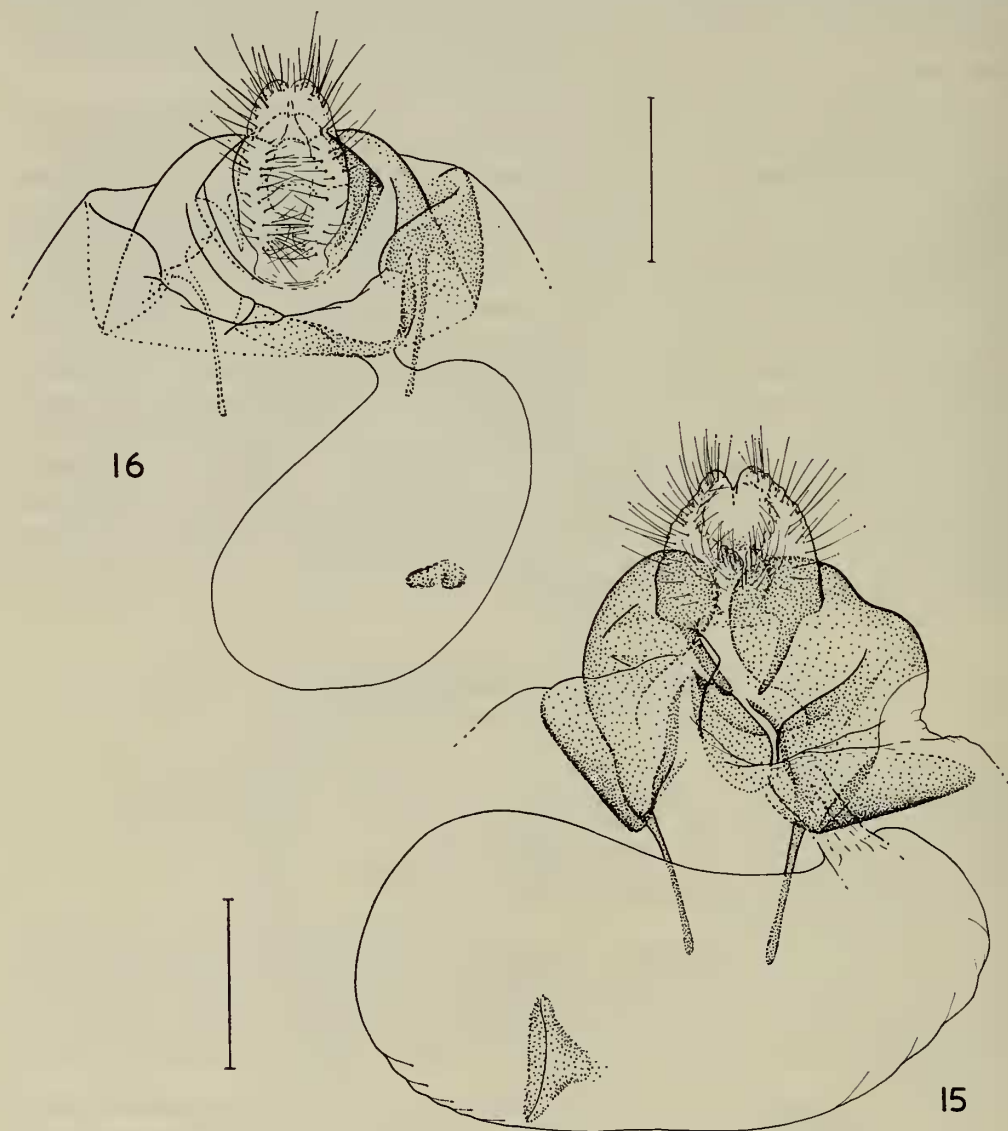
♂ GENITALIA (Text-figs. 17, 18): rounded uncus lobes each with long, acuminate, medial process arising from near base; valves small; eighth sternum with slender, asymmetric posterior processes, slightly dilated apodemes and broad medial plate.

♀. Similar to male but with greatly reduced outer marginal processes (Plate 1, fig. 274).

♀ GENITALIA (Text-fig. 16) : ostial and post-ostial segment well sclerotized ; bursa with pair of closely apposed, ovoid signa.

MEASUREMENTS. A.P.R. : ♂. 22 ; ♀. 20. Wing : ♂. 19.0, 15.0-22.0 mm. (25) ; ♀. 20.5, 15.5-23.5 mm. (50).

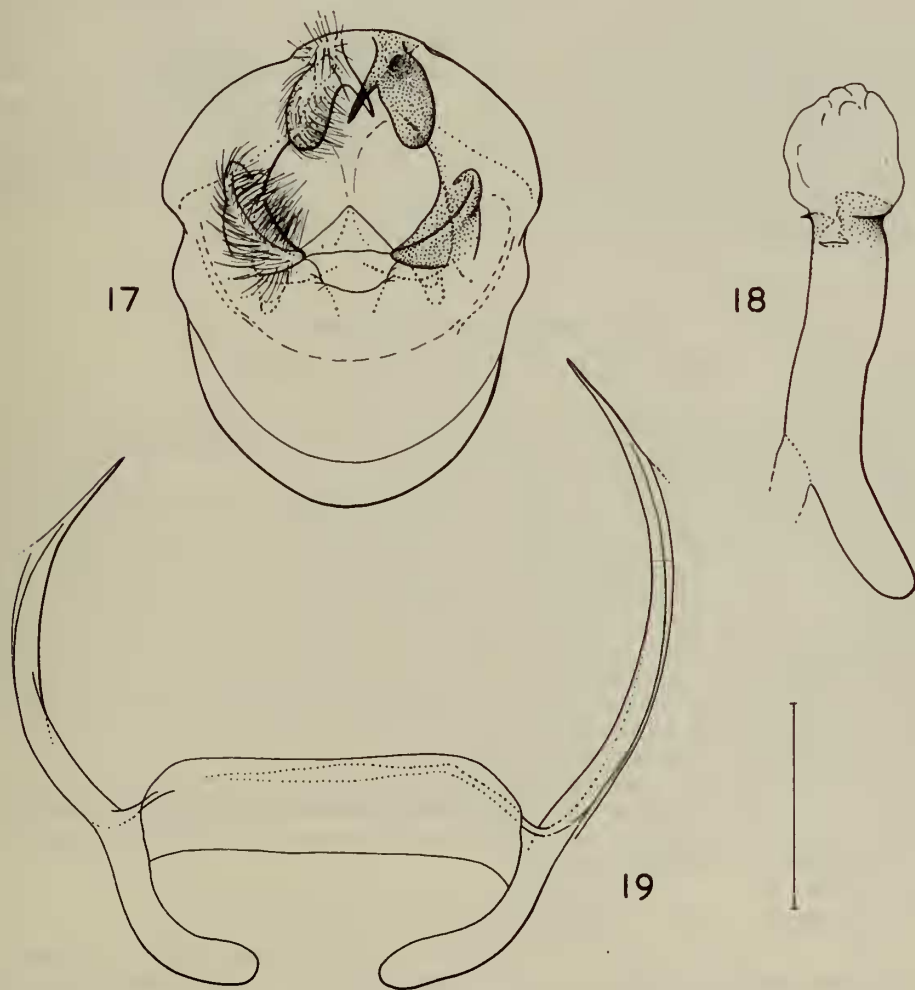
DISCUSSION. Comparison of the colour-pattern and the male genitalia suggests a close affinity between *andersoni* and *tamsi*. An apparent overlapping of ranges (see Map 1) in the Congo prohibits the otherwise logical treatment of *tamsi* and



FIGS. 15-16, *Epicamptoptera*, ♀ genitalia. 15, *marantica* ; 16, *andersoni*.

*andersoni* as subspecies of one extensive species. It is probable on the evidence of comparative structural difference and present knowledge of distribution that the two species were originally subspecies of a polytypic species and that *tamsi* and *andersoni* now form a superspecies.

This is another very variable species. The ground-colour of the upper surface of the wings may be reddish, greyish or yellowish brown, or very dark brown. There is often a darker medial area on the fore wing, rarely with an irregularly shaped greyish white central marking. One of the specimens examined from Mt. Elgon is a very pale yellowish brown with dark brownish or black postmedial fasciae and irregularly shaped medial markings.



FIGS. 17-19, *Epicamptoptera andersoni*, ♂ genitalia. 17, ♂ ; 18, aedeagus ; 19, eighth abdominal sternite.

The colour-plate of this species given by Gaede (1927 b) in Seitz is particularly inaccurate and misleading.

DISTRIBUTION. KENYA, UGANDA and the CONGO ; in rain-forest or montane forest localities.

MATERIAL EXAMINED. Type. Holotype ♂, KENYA, 1922 (Anderson) ; Drepanidae genitalia slide No. 1148 ; in the British Museum (Natural History).

Other material. *British Museum (Natural History)*. KENYA : allotype ♀, 4 ♀, 1 ♂, 1922 (Anderson) ; 3 ♀, Kericho, 5.15.vi.1922 (Anderson) ; 3 ♂, 1 ♀, Mt. Elgon, 21.iii.14.viii.x.1931 (Jackson). UGANDA : 21 ♂, 41 ♀, Toro, Bukumbi (Hancock). *Coryndon Museum, Nairobi*. KENYA : 1 ♂, 1 ♀, Mt. Elgon, x.1958 (Jackson) ; 1 ♂, Kabras, Malowa Forest, v.1952 (Pinhey). UGANDA : 1 ♂, Fort Portal, Mpanga Forest, v.1958 (Carcasson) ; 1 ♀, Bwamba, vi.1956 (Carcasson) ; 3 ♂, Ankole, Kalinzu Forest, xi.1961, (Carcasson). *Musée Royal de l'Afrique centrale, Tervuren*. CONGO : 1 ♀, Eala, xii.1936, (Ghesquière) ; 1 ♀, Costermansville, iv.1938 (Ghesquière) 3 ♂, 1 ♀, Kibali-ituri, Nioka, 9.xi.1934 (Leroy), 14.ii.1952, 29.viii.1954 (Hecq) ; 5 ♂, Rutshuru, ii.1937, i, iii.1938 (Ghesquière) ; 1 ♀, W. Kivu, Ibanda, 1937 (Vandelannoite). *Muséum national d'Histoire, Entomologie agricole tropicale, Paris*. CENTRAL AFRICAN REPUBLIC : 1 ♀, Boukoko, 11.xi.1962 (Pujol).

### *Epicampoptera tamsi* sp. n.

(Text-figs. 20-22 ; Pl. 2, fig. 277 ; Map 1)

DESCRIPTION. ♂. (Plate 2, fig. 277). Palp very dark brown on outer surface, pale brown on inner surface. Head dark greyish brown, except for pale yellowish brown band at posterior margin. Antennal shaft pale yellowish brown above.

Vestiture of patagia very pale brownish white with brown band near posterior margin. Colour of rest of thorax doubtful, probably pale greyish brown dorsally and dull yellow ventrally. Front of tibia of fore leg and proximal part of tarsus dark greyish brown, remaining legs and rest of fore leg dull yellow. Venation of both wings as for *strandi*. Upper surface of wings as in Plate 2, fig. 277. In the illustrated specimen (holotype) the dark areas are reddish brown and the lighter areas pale brown (the subterminal spot between  $M_3$  and  $Cu_{1a}$  is more strongly marked than the photograph shows). Under surface of both wings very pale pinkish brown, more yellowish at anal margin ; discocellular spot well marked on both wings, very dark brown ; dark brown postmedial fascia of fore wing corresponding in position with same fascia on upper surface ; similarly coloured postmedial fascia of hind wing nearly parallel to outer margin, not corresponding with same fascia on upper surface.

Colour of abdomen as for corresponding surfaces of hind wing.

♂ GENITALIA (Text-figs. 20-22) : each lobe of uncus with short, acuminate medial process ; valve rugose anteriorly at base ; eighth sternum with long apodemes and stout, asymmetric posterior processes ; medial plate narrow.

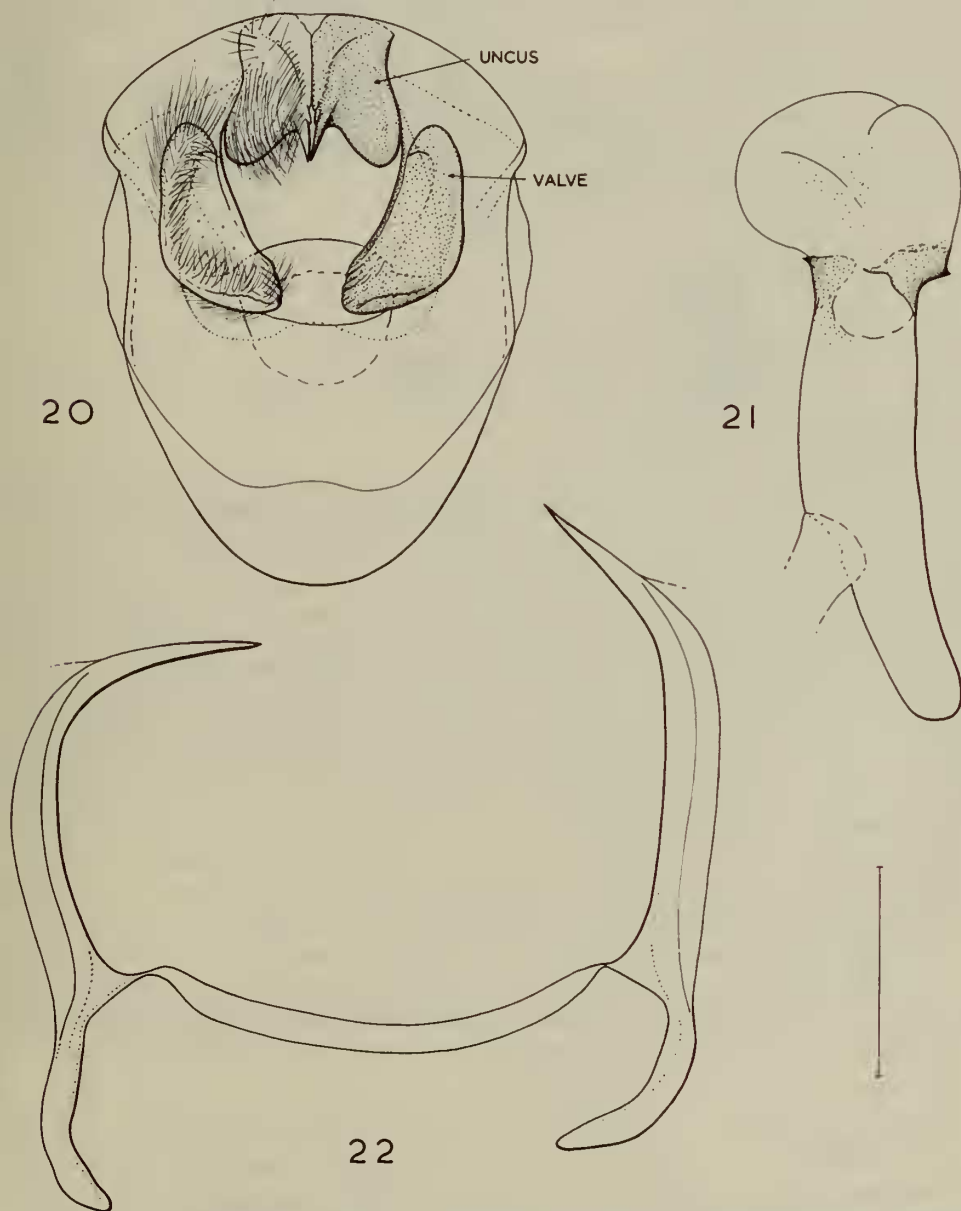
♀. Unknown.

MEASUREMENTS. A.P.R. : ♂. 20. Wing : ♂. 19.0, 16.5-20.0 mm. (6).

DISCUSSION. The superspecific relationship between this species and *andersoni* has been discussed on pp. 20-21. As only six specimens of *tamsi* were available for study a comparison of external characters is inconclusive, but there seem to be no significant differences in coloration or colour-pattern between *tamsi* and *andersoni*.

The shape of the uncus, valves, and apodemes of the eighth sternum in the male genitalia readily separate the two species however.

Individual variation in coloration is as striking as in *andersoni*. The ground-colour of the upper surface of the wings may be dark or light greyish brown, very



FIGS. 20-22, *Epicamptoptera tamsi*, ♂ genitalia. 20, ♂ ; 21, aedeagus ; 22, eighth abdominal sternite.



light brown, light or dark reddish brown. The spots and fasciae may be well marked or hardly discernible.

DISTRIBUTION (Map 1). ANGOLA and the CONGO.

MATERIAL EXAMINED. Type. Holotype ♂, ANGOLA, Quicolungo, 120 km. N. of Lucala, iv.1936 (*Braun*) ; Drepanidae genitalia slide No. 1145 ; in the British Museum (Natural History).

Paratypes. *British Museum (Natural History)*. ANGOLA : 3 ♂, Quicolungo, 120 km. N. of Lucala, 800 m. (*Braun*) ; 2 ♂, N'Dalla Tando, 2,700 ft., 24.xi.1908, 20.i.1909 (*Ansorge*). *Musée Royal de l'Afrique centrale, Tervuren*. CONGO : 1 ♂, Uele, Paulis, 27.viii.1959 (*Fontaine*).

### *Epicampoptera difficilis* Hering

(Text-figs. 23-26 ; Pl. 2, fig. 276 ; Map 1)

*Epicampoptera difficilis* Hering, 1934 a : 401.

DESCRIPTION. ♂, ♀. There seems to be no significant external differences between *difficilis* and *andersoni* (see Plate 2, fig. 276), although in both lectotype and paralectotype of *difficilis* the postmedial fascia on the upper surface of both wings is very weakly marked.

♂ GENITALIA (Text-fig. 24-26) : each lobe of uncus with very short acuminate medial process ; (valves not opened out in figure) ; shape of saccus not known ; basal half of aedeagus missing. Eighth sternum with stout, acuminate, slightly asymmetric posterior arms ; medial part narrow, slightly expanded at middle ; apodemes broken, but according to the figure given by Hering (1934 a : 402) similar to those of *andersoni* though apparently not dilated apicad. (The slide which formed the basis of Text-figs. 24-26 was prepared from a damaged dry preparation.)

♀ GENITALIA (Text-fig. 23) : both ostial and post-ostial segment strongly sclerotized ; ostium shielded ventrally by two closely approximated processes ; signum irregularly shaped, with transverse sulcus. (The genitalia from which the text-figure has been prepared was damaged and distorted and has been drawn exactly as it appears on the slide. It is unlikely that the female genitalia are normally asymmetric.)

MEASUREMENTS. A.P.R. : ♂. 18. Wing : ♀. 21.0 mm. (1) 19.5 mm. (1).

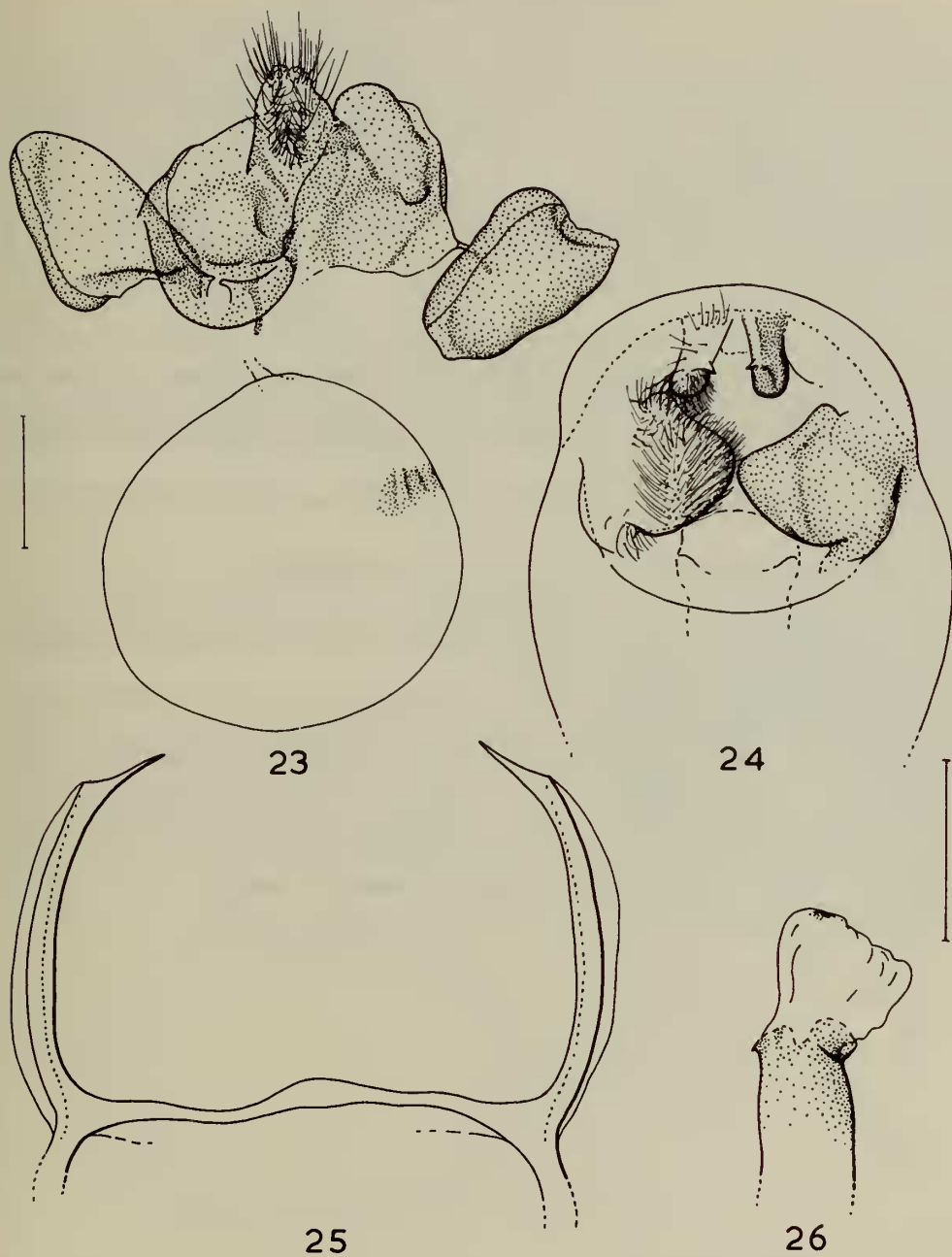
DISCUSSION. Distinguished from *ivoirensis*, *andersoni* and *tamsi*, all of which are closely related to *difficilis*, apparently only by the genitalia.

It is remarkable that amongst the numerous specimens of *Epicampoptera* examined from neighbouring regions of the mainland of Africa no specimens of this species have been discovered, and it is possible that *difficilis* is replaced by *ivoirensis* in the Ivory Coast, Ghana and Guinea, the two species forming a superspecies.

DISTRIBUTION (Map 1). FERNANDO PO.

MATERIAL EXAMINED. LECTOTYPE. I have selected and labelled as lectotype the male from the pair of syntypes in the Zoologisches Museum, Berlin. It bears the following data : " Fernando Poo, Santa Isabel, 5.ix.1916 (*G. Tessman*) ; Drepanidae genitalia slide No. 1240 ".

Paralectotype. ♀, same collection data as type.



FIGS. 23-26, *Epicamptoptera difficilis*, genitalia. 23, ♀; 24, ♂ (saccus missing); 25, ♂ eighth abdominal sternite (incomplete); 26, aedeagus (base missing).

*Epicampoptera ivoirensis* sp. n.

(Text-figs. 27-30 ; Map 1)

DIAGNOSIS. ♂, ♀. I can find no significant external differences between this species and *andersoni*. The degree and type of individual variation in coloration is the same in both species.

♂ GENITALIA (Text-figs. 28-30) : saccus moderately globose ; eighth sternum subject to small variations in length of arms, but apparently invariably contorted as in Text-fig. 29 ; apodemes directed posterolaterally.

♀ GENITALIA (Text-fig. 27) : ostial and post-ostial segment strongly sclerotized ; posterior apophyses very short ; anterior apophyses long ; ostium broad, not shielded ventrally by processes of ostial segment ; signum simple.

MEASUREMENTS. A.P.R. : ♂. 20 ; ♀. 15. Wing : ♂. 20.5, 17.0-21.0 mm. (15) ; ♀. 22.0, 19.5-22.5 mm. (5).

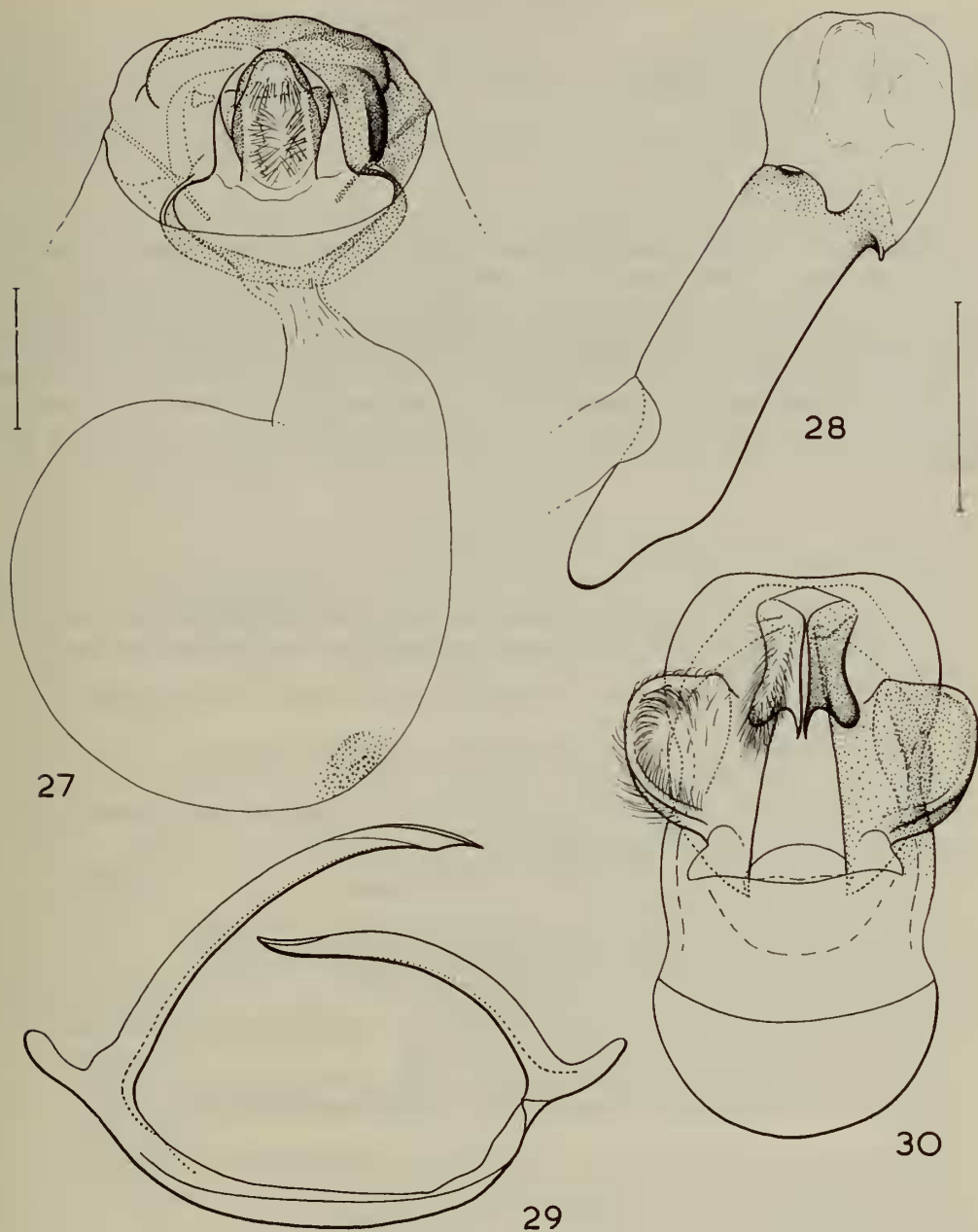
DISCUSSION. As suggested on page 24, this species is possibly most closely related to *difficilis*, known only from Fernando Po, and may replace it on this part of the mainland of Africa, the two species forming a single superspecies. However, until a second male of *difficilis* is available, with complete genitalia, it is not possible to confirm this.

Distinguished from *difficilis*, and from *andersoni* and *tamsi*, by the male and female genitalia.

DISTRIBUTION (Map 1). GHANA, IVORY COAST and GUINEA.

MATERIAL EXAMINED. Type. Holotype ♂, IVORY COAST, Adiopodoumé, 26.v.1954 (*Réal*) ; Drepanidae genitalia slide No. 1140 ; in the Institut d'Enseignement et de Recherches tropicales, Bondy.

Paratypes. *Institut d'Enseignement et de Recherches tropicales, Bondy*. IVORY COAST : 13 ♂, 4 ♀, Adiopodoumé 2.vii.-28.xi.1954, 21.i.1955, 28.iii.1955, 16.v.1957, 15.i.1959 (*Réal*). *Muséum national d'Histoire naturelle, Entomologie agricole tropicale, Paris*. IVORY COAST : 6 ♂, 8 ♀, Bingerville (1 ♂ on *Coffea robusta*, 1 ♂ by U.V. light) (*Pujol*). GUINEA : 1 ♂, Macenta, 15.vi.1953 (*Pujol*) ; 3 ♂, 1 ♀, Sérédou, 12.xii.1957, 17.ii.1959, 7.xii.1959 (*Pujol*). *British Museum (Natural History)*. GHANA : 1 ♂, Aburi, vi.1925 (*Cotterell*). IVORY COAST : 3 ♂, 1 ♀, Adiopodoumé, 2.ii.1955, 28.iii.1955, 22.viii.1959, 3.ix.1959 (*Réal*).



FIGS. 27-30, *Epicamptoptera ivoirensis*, genitalia. 27, ♀; 28, aedeagus; 29, ♂ eighth abdominal segment; 30, ♂.

SPECIES-GROUP *erosa*

Venation as in Text-figs. 1, 2. ♂ GENITALIA (see labelled Text-fig. 56) : uncus bilobed, each lobe truncate or acuminate posteriorly ; valve small, with strongly sclerotized, curved, inwardly directed basal process ; diaphragma pouch-like, invaginate anteriorly dorsal to saccus ; aedeagus variously shaped at apex, vesica with single cornutus ; eighth sternite bilaterally symmetrical, paired posterior processes very short in *notialis*, *graciosa*, *griveaudi* and *inornata* but long in remaining species ; eighth tergite with short apodemes. ♀ GENITALIA as in text-figures ; signum elongate, tapered, V-shaped in cross-section.

Ten species are included in this group. Seven of these are African. The remaining three, *carnea*, *graciosa* and *griveaudi*, are endemic to Madagascar : they are closely related to each other and to *notialis*, the only South African species. A single female from W. Kivu (Congo) and a male from Lourenço Marques (Mozambique) in the collection of the British Museum (Natural History) are doubtless close relatives of *notialis* and probably represent, respectively, two new species. The species *heringi* and *heterogyna* form a superspecies. The species *erosa*, *tumidula*, *pallida* and *robusta* are very closely allied and are almost identical in colour-pattern and coloration.

## KEY TO SPECIES

## MALES

- |   |                                                                                                                                                                           |                           |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| 1 | Posterior processes of eighth sternite as long as apodemes (e.g. Text-figs. 32, 59)                                                                                       | 2                         |
| – | Posterior processes of eighth sternite minute, apodemes short (e.g. Text-fig. 46)                                                                                         | 7                         |
| 2 | Posterior processes of eighth sternite arcuate, arising from near middle of posterior margin (e.g. Text-fig. 32)                                                          | 3                         |
| – | Posterior processes of eighth sternum straight, separated by width of posterior margin (e.g. Text-fig. 59)                                                                | 6                         |
| 3 | Aedeagus as in Text-fig. 42 ; uncus with short, anterior process (Text-fig. 40) ; valve processes robust, densely setose (Text-fig. 40)                                   | <i>robusta</i> (p. 33)    |
| – | Aedeagus not modified as in <i>robusta</i> ; valve process less robust, not densely setose ; anterior process of uncus longer than in <i>robusta</i>                      | 4                         |
| 4 | Aedeagus with two lateral, apical carinae (Text-fig. 37) ; uncus as in Text-fig. 39 ; posterior arms of eighth sternite with small dorsal bulge                           | <i>pallida</i> (p. 31)    |
| – | Aedeagus with lateral apical carinae ; uncus with longer or shorter anterior processes than in <i>pallida</i> ; posterior arms of eighth sternite without dorsal bulge    | 5                         |
| 5 | Anterior processes of uncus broad, flattened (Text-fig. 35)                                                                                                               | <i>erosa</i> (p. 31)      |
| – | Anterior processes of uncus short (Text-fig. 31)                                                                                                                          | <i>tumidula</i> (p. 29)   |
| 6 | Valve processes short, not overlapping (Text-fig. 62) ; posterior processes of eighth sternite much longer than apodemes (Text-fig. 64)                                   | <i>heringi</i> (p. 43)    |
| – | Valve processes very short, overlapping at median line (Text-fig. 58) ; posterior processes of eighth abdominal sternite about equal to length of apodemes (Text-fig. 59) | <i>heterogyna</i> (p. 40) |
| 7 | Valve processes extending posteriorly nearly to anterior margin of uncus lobes (Text-fig. 50)                                                                             | <i>griveaudi</i> (p. 38)  |
| – | Valve processes short, not extending as far as uncus lobes                                                                                                                | 8                         |
| 8 | Uncus as in Text-fig. 44                                                                                                                                                  | <i>notialis</i> (p. 35)   |
| – | Uncus not as in Text-fig. 44                                                                                                                                              | 9                         |
| 9 | Uncus and valve processes as in Text-fig. 47                                                                                                                              | <i>carnea</i> (p. 36)     |
| – | Uncus and valve processes as in Text-fig. 56                                                                                                                              | <i>graciosa</i> (p. 38)   |



*Epicamptoptera tumidula* sp. n.

(Text-figs. 31-34 ; Pl. 4, fig. 286 ; Map 2)

DESCRIPTION ♂. Palp and front of head greyish brown ; vertex pale buff ; shaft of antenna pale buff proximally, becoming more greyish towards apex ; posterior margin of head greyish brown laterally and ventrally.

Thorax very pale buff. Legs very pale buff, with front surface of prothoracic femur, tibia and tarsus greyish brown.

Upper surface of both wings (Plate 4, fig. 286) very pale buff or very pale greyish buff (holotype) lightly speckled with dark brown ; fore wing with weakly marked discocellular spot, trace of postmedial fascia in some specimens (not holotype), well marked reddish brown subterminal spot between  $M_3$  and  $Cu_{1a}$ , and usually with trace of second subterminal marking between  $M_2$  and  $M_3$  ; hind wing with well marked discocellular spot, usually with weakly marked postmedial fascia (including holotype), and with two reddish brown subterminal markings between  $M_2$  and  $Cu_{1a}$  (weakly marked in holotype ; sometimes strongly marked). Under surface of fore wing paler than upper surface, speckled and striate with greyish brown except at anal margin ; discocellular spot and postmedial fascia dark grey ; fringe yellowish brown proximally, brownish white distally. Under surface of hind wing paler than fore wing, striate with greyish brown along costa and outer margin ; discocellular spot dark grey ; trace of postmedial fascia present in few specimens (including holotype) ; fringe as for fore wing.

Abdomen similar in colour to corresponding surface of hind wing.

♂ GENITALIA (Text-figs. 31-33) : acuminate valve process sparsely setose ; anterior basal processes of uncus short ; apex of aedeagus with lateral lobes or carinae ; posterior arms of eighth sternite without bulges.

♀. As for male but wings less strongly produced at outer margin between  $M_3$  and  $Cu_{1a}$ .

♀ GENITALIA (Text-fig. 34) : ostial segment particularly heavily sclerotized at ostium.

MEASUREMENTS. A.P.R. : ♂, ♀. 19. Wing : ♂. 19.0, 17.0-21.0 mm. (35) ; ♀. 22.0, 20.5-23.0 mm. (4).

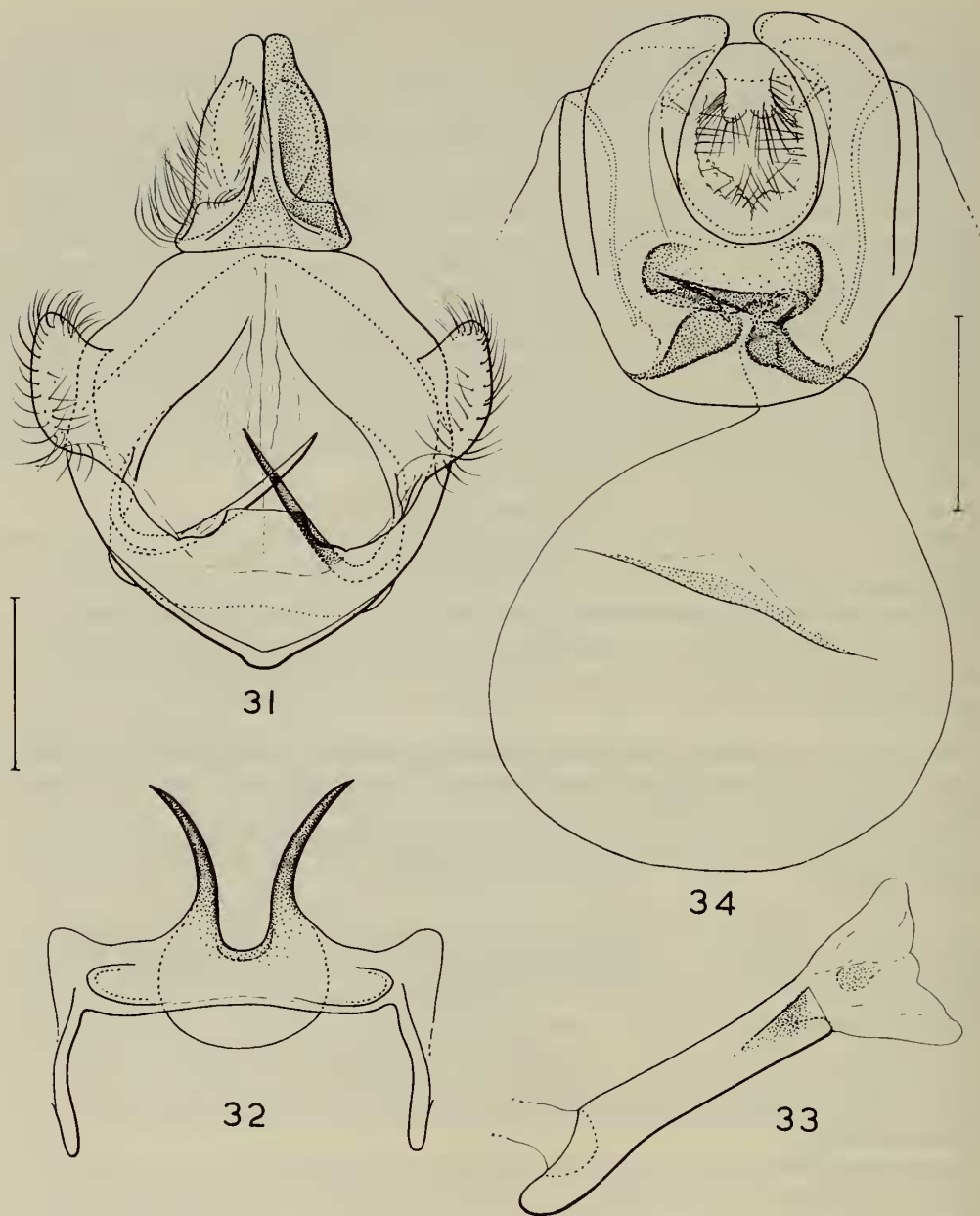
DISCUSSION. Apparently indistinguishable externally from *pallida*, *erosa* or *robusta*. The male genitalia are most like those of *erosa*, but the shape of the uncus and the aedeagus is diagnostic.

There is some individual variation in the markings of both surfaces of the wings (see Description).

DISTRIBUTION (Map 2). Occurs in GABON, where it is possibly sympatric with *erosa*, and in CAMEROUN. A single male from the CONGO (in the Musée Royal de l'Afrique centrale, Tervuren) probably also represents *tumidula*, although further material is needed before this can be confirmed.

MATERIAL EXAMINED. Type. Holotype ♂, CAMEROUN, Ja River, 2,000 ft., dry season (Bates) ; Drepanidae genitalia slide No. 1293 ; in the British Museum (Natural History).

Paratypes. *British Museum (Natural History)*. CAMEROUN : 3 ♂, 1 ♀, Bitje, Ja River, x, xi (Bates) ; 1 ♀, Sakbayeme, 5.x.1921 (Schwab) ; 1 ♂, Epulan, 17.iv.1926 (Schwab). *Carnegie Museum, Pittsburgh*. CAMEROUN : 35 ♂, 2 ♀, Efulen, 5.vii-12.xii.1912, 11.x.-2.xii.1913, 24-25.ii.1914, 29.iv-24.xi.1922, 8.i-19.iv.1923, 28.x-24.xi.1924, 24.ix.1925 (Weber). *Muséum national d'Histoire naturelle, Entomologie agricole tropicale, Paris*. GABON : 1 ♂, 1 ♀, Oyem, ix, x.1949 (Rougeot).



FIGS. 31-34, *Epicamptoptera tumidula*, genitalia. 31, ♂; 32, ♂ eighth abdominal sternite; 33, aedeagus; 34, ♀.

***Epicamptoptera erosa* (Holland)**

(Text-figs. 35, 36 ; Map 2)

*Thymistida erosa* Holland, 1893 : 180. [Poor figure.]*Epicamptoptera erosa* (Holland) ; Gaede in Seitz, 1927 b : 290. [Poor figure.]*Epicamptoptera erosa* (Holland) ; Gaede, 1931 : 52.

DIAGNOSIS. ♂. A comparison of a photograph of the lectotype of *erosa* with specimens of *tumidula* has shown that there are probably no significant external differences between the two species. (The subterminal spots on both wings are clearly marked in the lectotype of *erosa*.)

♂ GENITALIA (Text-figs. 35, 36) : acuminate valve process less sparsely setose than in *tumidula* ; anterior basal processes of uncus large, flattened ; apex of aedeagus weakly dilate ; posterior arms of eighth sternite without bulges ; eighth tergite as for *tumidula*.

♀. Not known.

MEASUREMENTS. A.P.R. : not known. Wing : ♂. 18.0 mm. (1).

DISCUSSION. Probably not separable from *pallida*, *tumidula*, or *robusta* on external characters. The male genitalia of *tumidula* are similar to those of *erosa* but differ in the shape of the uncus and aedeagus.

DISTRIBUTION (Map 2). GABON.

Type. Holland described this species from two males in the Carnegie Museum (wrongly listed by him as a male and a female) from " the valley of the Ogowe [Ogowe] River ". I select as LECTOTYPE the smaller of these two syntypes and have labelled the lectotype genitalia slide (No. C-564) as such : I have not seen the whole moth, which has been labelled for me by Dr. H. K. Clench of the Carnegie Museum. The paralectotype is not conspecific with the lectotype and probably belongs to the new species *tamsi* : I have also seen and labelled the genitalia slide of this specimen.

***Epicamptoptera pallida* (Tams)**

(Text-figs. 37-39 ; Map 2)

*Metadrepana pallida* Tams, 1925 : 291.*Epicamptoptera pallida* (Tams) ; Gaede in Seitz, 1927 b : 291.*Epicamptoptera pallida* (Tams) ; Gaede, 1931 : 52.

DESCRIPTION. ♂. Probably not separable from *tumidula* and *erosa* on external characters. (The only specimen available for study is in relatively poor condition.)

♂ GENITALIA (Text-figs. 37-39) : acuminate valve process sparsely setose, more slender than in most specimens of *tumidula* ; anterior basal processes of uncus longer than in *tumidula* ; aedeagus with two minutely spinose lateral carinae at apex ; each posterior arm of eighth sternite with small, dorsal bulge.

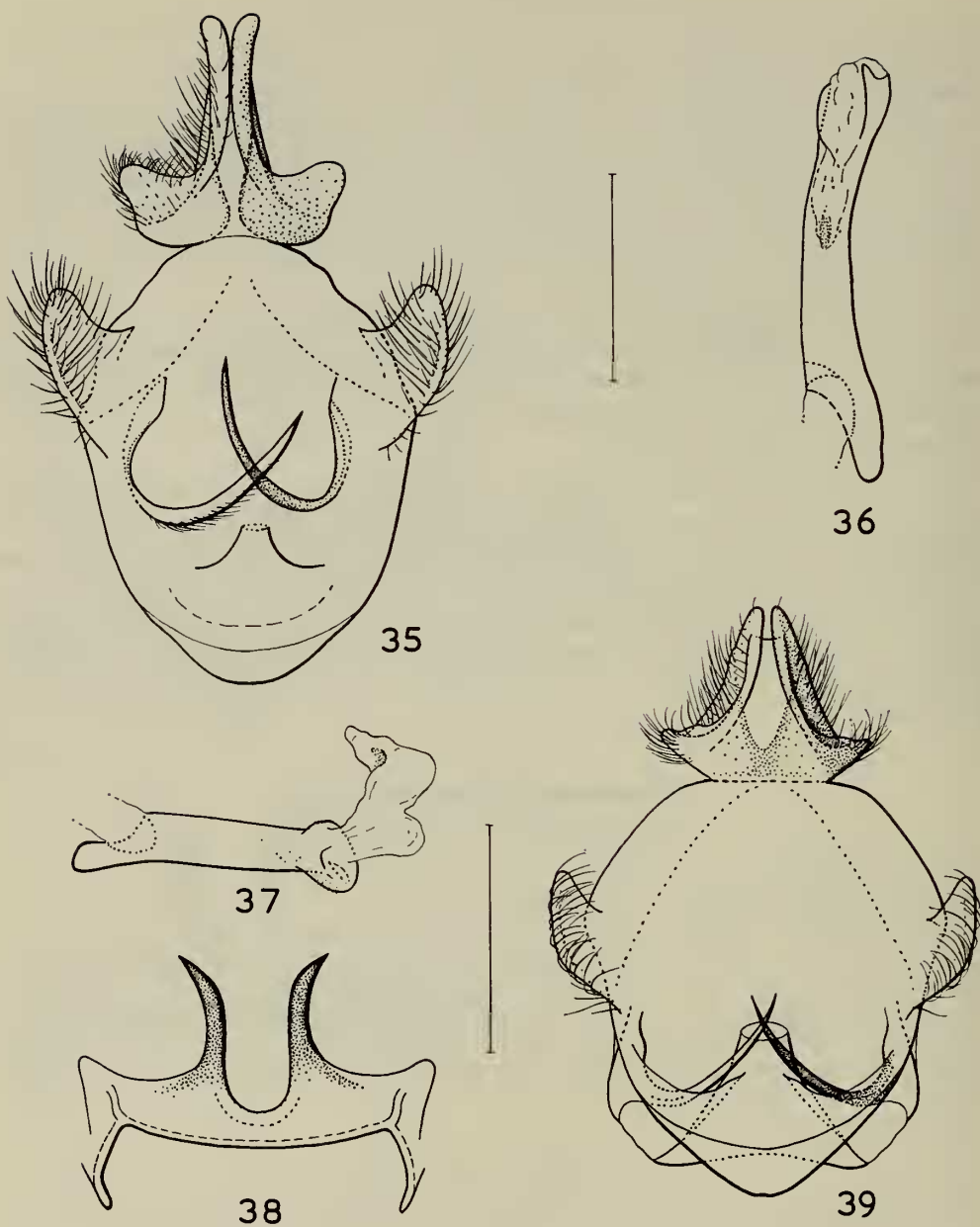
♀. Unknown.

MEASUREMENTS. A.P.R. : ♂. 20. Wing : ♂. 17.5 mm. (1).

DISCUSSION. This species is closely related to *pallida*, *tumidula* and *erosa*, but can be distinguished by the shape of the uncus and process at the base of the valve.

DISTRIBUTION (Map 2). Known only from northern NIGERIA.

MATERIAL EXAMINED. Type. Holotype ♂, N. NIGERIA (*Clouston*) ; Drepanidae genitalia slide No. 631 ; in the British Museum (Natural History).

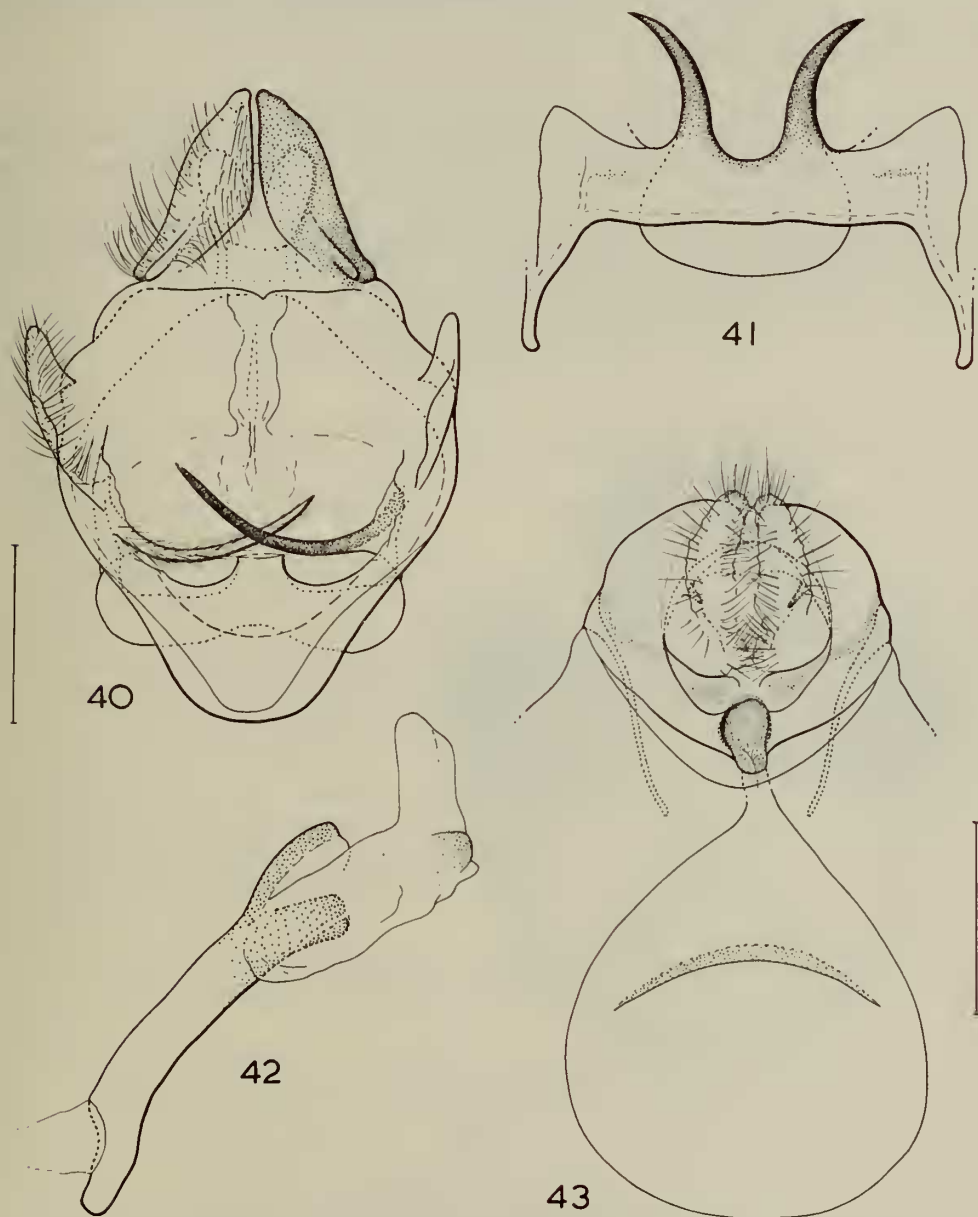


FIGS. 35-39, *Epicamptoptera*, ♂ genitalia. 35-36, *erosa*. 35, ♂; 36, aedeagus. 37-39, *pallida*. 37, aedeagus; 38, eighth abdominal sternite; 39, ♂.

***Epicamptoptera robusta* sp. n.**

(Text-figs. 40-42 ; Map 2)

DESCRIPTION. ♂. Coloration not differing significantly from that of *tumidula*. Colour-pattern, wing shape and venation as for *tumidula*.



FIGS. 40-43, *Epicamptoptera* genitalia. 40-42, *robusta*, ♂. 40, ♂ ; 41, eighth abdominal sternite ; 42, aedeagus. 43, *notialis*, ♀ genitalia.



♂ GENITALIA (Text-figs. 40-42) : valve process stout, densely setose ; aedeagus distinctly shaped at apex.

♀. Not known.

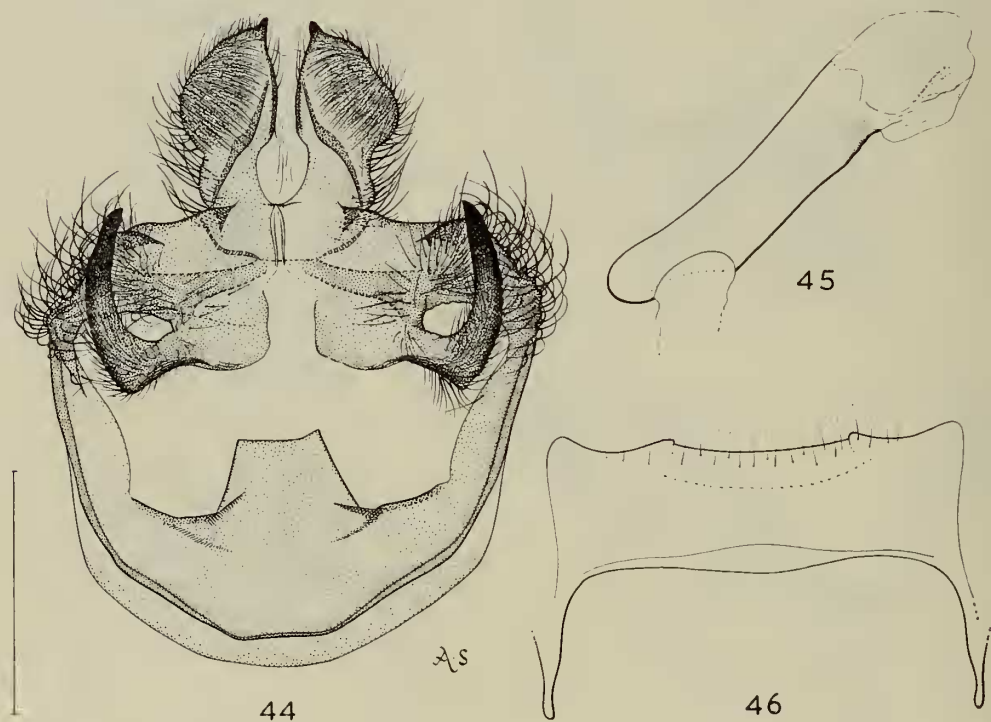
MEASUREMENTS. A.P.R. : ♂. 19. Wing : ♂. 19.0. 15.5-19.5 mm. (3).

DISCUSSION. This species is readily distinguished from *erosa*, *pallida* and *tumidula* by the distinctive aedeagus, and by the shape of the uncus and the acuminate valve processes in the male genitalia.

DISTRIBUTION (Map 2). Known only from N. E. CONGO.

MATERIAL EXAMINED. Type. Holotype ♂, CONGO, Uele, Paulis, 12.vii.1958 (*Fontaine*) ; Drepanidae genitalia slide No. 1292 ; in the Musée Royal de l'Afrique centrale, Tervuren.

Paratypes. Musée Royal de l'Afrique centrale, Tervuren. CONGO : 1 ♂ Uele, Paulis, 12.vii.1958, 27.vii.1957 (*Fontaine*). Coryndon Museum, Nairobi. CONGO : 1 ♂, Ituri, Bunia, Mt. Hoyo, iii.1959 (*Carcasson*).



FIGS. 44-46, *Epicamptoptera notialis*, ♂ genitalia. 44, ♂ ; 45, aedeagus ; 46, eighth abdominal sternite.

***Epicamptoptera notialis* sp. n.**

(Text-figs. 43-46 ; Pl. 3, fig. 282 ; Map 2)

DESCRIPTION. ♂. Palp brown on outer surface, paler on inner surface. Head brown, but with paler dorso-posterior area. Antenna buff or very pale brown.

Vestiture of thorax greyish (holotype), reddish or yellowish brown above (as for colour of adjacent surface of fore wing) ; hair scales white-tipped on anterior part of thorax. Outer surface of femur, tibia and tarsus of fore leg greyish brown ; remaining legs and inner surface of fore leg pale buff.

Venation as for *tumidula* (Text-figs. 1, 2) ; shape as in Plate 3, fig. 282. Ground-colour of upper surface of both wings pale greyish (holotype) reddish or yellowish brown ; medial shade of both wings darker than rest of wing, interrupted on fore wing by two irregularly shaped pale areas ; discocellular spots present on both wings, well marked on hind wing ; postmedial fascia clearly defined ; subterminal fascia represented by two dark brown spots between  $M_2$  and  $Cu_{1a}$  on fore wing ; similar subterminal markings on hind wing but faintly marked in holotype and most paratypes. Under surface of both wings pale buff (holotype), greyish buff or reddish buff speckled with brownish grey ; greyish brown, well marked discocellular spot ; greyish brown postmedial fascia, well marked on fore wing, poorly defined on hind wing.

Colour of abdomen as for corresponding surface of hind wing.

♂ GENITALIA (Text-fig. 44-46) : valve process short arcuate ; lobes of uncus with very short posterior process.

♀. As for male but with less strongly dentate wing margins.

♀. GENITALIA (Text-fig. 43) : dorsal lobe of eighth segment covering dorsal surface of ovipositor lobes.

MEASUREMENTS. A.P.R. : ♂. 19 ; ♀. 15. Wing : ♂. 18.0, 16.0-19.0 mm. (7) ; ♀. 18.5 mm. (2).

DISCUSSION. This species has close affinities with the Madagascan species *graciosa*, *griveaudi* and *carnea*. It can be distinguished from them, externally, chiefly by the usually more strongly marked subterminal spots on the upper surface of the fore wing and by the larger, more conspicuous, discocellular spot on the hind wing. The shape of the uncus and valve process in the male genitalia and the eighth segment in the female genitalia also provide good diagnostic characters.

The individual variation of the coloration, indicated in the description, is similar to that found in the three Madagascan species mentioned above, although the black patch at the anal end of the medial shade present in some specimens of *griveaudi* and *carnea* has not been seen in the available material of *notialis*.

DISTRIBUTION (Map 2). SOUTH AFRICA : TRANSVAAL, NATAL and CAPE PROVINCE.

MATERIAL EXAMINED. Type. Holotype ♂, TRANSVAAL, Louis Trichardt, 2.v.1953 (*Vari*) ; Drepanidae genitalia slide No. 1224 ; in the Transvaal Museum, Pretoria.

Paratypes. Transvaal Museum, Pretoria. TRANSVAAL : 2 ♂, Louis Trichardt, 2.v.53, 23-24.iv.1956 (*van Son, Vari*) ; 2 ♂, Marieps Mts., xii.1925, 24-25.i.1956 (*van Son, Vari*). NATAL : 1 ♂, Unkomas, 26.xii.1914 ; 1 ♂, Karkloof, 27.i.17 (*Janse*) ; 1 ♀, Pinetown 6.iv.19 (*Platt*) ; 1 ♀, Durban, 29.iii.01 (*Ross*). CAPE PROVINCE : 1 ♂, W. Pondoland, Nggrleni, 27.iii.1904 (*Swinny*). (A female labelled " Bed Marlen, 10.05 " also examined.) *British Museum (Natural History)*. NATAL : 1 ♂, Karkloof, 27.vii.16 (*Hargreaves*). *Coryndon Museum, Nairobi*. NATAL : 1 ♂, Balgowan, 17.iii.52 (*Pennington*).

***Epicamptoptera carnea* (Saalmüller) sp. rev., comb. n.**

(Text-figs. 47-49 ; Pl. 3, fig. 279 ; Map 2)

*Oreta carnea* Saalmüller, 1884 : 220.*Oreta carnea* Saalmüller ; Kirby, 1892 : 728.

DESCRIPTION (Plate 3, fig. 279). Palp and front of head light brown ; vertex and antenna very light brown.

Thorax usually very light brown dorsally, with paler, almost white, patagial vestiture. Ventral surface of thorax light yellowish brown, but darker brown immediately posterior to eyes. Legs light yellowish brown, with front surface of prothoracic trochanter, femur and tibia slightly darker brown.

Venation of both wings as for *tumidula* (Text-figs. 1, 2). Ground-colour of upper surface of fore wing usually very light lustrous brown (including type) ; medial shade medium brown, non-lustrous, broken by lighter central area ; trace of discocellular spot ; subterminal spot between  $M_3$  and  $Cu_{1a}$  weakly marked, non-lustrous. Coloration of hind wing similar to fore wing. Under surface of both wings light yellowish or pinkish brown, lustrous, lightly speckled with darker brown in some specimens ; fore wing with trace of dark postmedial fascia and discocellular spot ; hind wing with dark postmedial fascia and trace of discocellular spot.

Colour of abdomen as for corresponding surfaces of hind wing.

♂ GENITALIA (Text-figs. 47, 48) : valve process short, sigmoid ; ventro-lateral lobe of uncus long, truncate, dorso-posterior process acuminate ; posterior processes of eighth sternite as for *griveaudi* (Text-fig. 52).

♀. As for male but outer margin of both wings much less strongly produced between  $M_3$  and  $Cu_{1a}$ .

♀ GENITALIA (Text-fig. 49) : dorsal lobe of eighth segment strongly striate near medial line.

MEASUREMENTS. A.P.R. : ♂. 18. Wing : ♂. 16.5, 15.0-18.5 mm. (12) ; ♀. 20.5, 18.5-22.5 mm. (2).

DISCUSSION. Gaede (1927 b : 288), in Seitz, treated *carnea* as a junior synonym of *Ctenogyna natalensis* Felder (see p. 48) but an examination of the holotype has shown that *carnea* belongs to the genus *Epicamptoptera*.

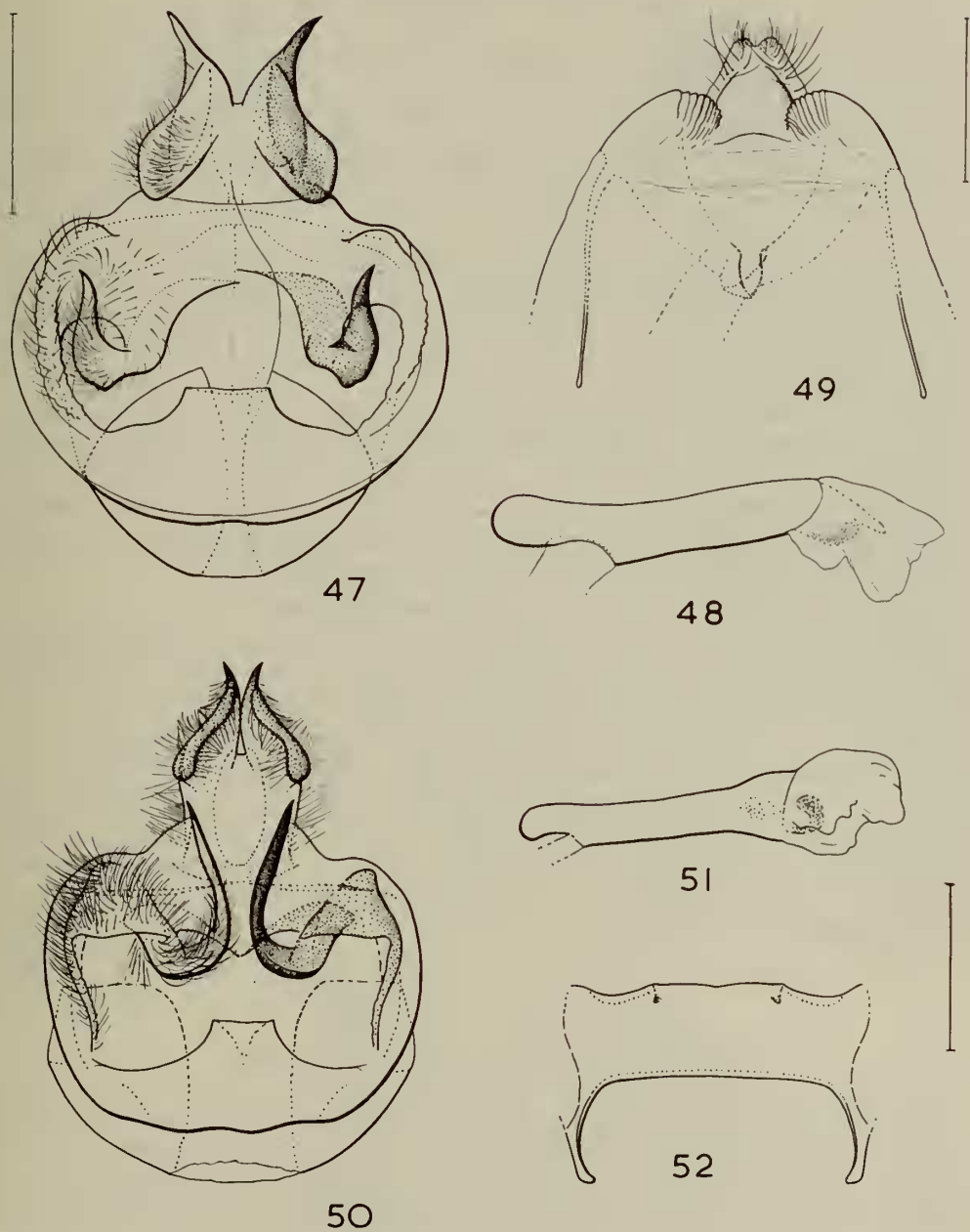
This species, which is apparently restricted to northern Madagascar, is closely related to the other two Madagascan species *graciosa* and *griveaudi* and to the African *notialis*. Externally it is probably indistinguishable from *griveaudi* but differs from *graciosa* and *notialis* in the less strongly marked subterminal spots or discocellular spot. The genitalia of both sexes are distinctive.

There is considerable individual variation in the coloration of the ground-colour of the upper surface of the wings which may be a light yellowish brown or reddish brown (holotype) or very dark greyish brown. The medial shade of both wings, which is usually strongly marked, is black at the anal margin of the wings in two specimens (a similar colour-form occurs in *griveaudi*). In a few specimens there is a second subterminal spot between  $M_2$  and  $M_3$  on the hind wing ; in others the fore wing subterminal markings are hardly visible.

DISTRIBUTION (Map 2). Only known from northern MADAGASCAR.

MATERIAL EXAMINED. Type. Holotype ♀,; N. MADAGASCAR, Loucoubé, 82 (*Stumpff*) ; in the Senckenbergische Naturforschende Gesellschaft, Frankfurt a.M.

Other material. *British Museum (Natural History)*. N. MADAGASCAR : 15 ♂, 1 ♀, Diego Suarez, 4.iii.-16.ix.1917 (*Mélou*).



FIGS. 47-52, *Epicamptoptera*, genitalia. 47-49, *carnea*. 47, ♂; 48, aedeagus; 49, ♀ (dorsal view). 50-52, *griveaudi*. 50, ♂; 51, aedeagus; 52, ♂ eighth abdominal sternite.



*Epicampoptera griveaudi* sp. n.

(Text-figs. 50-53 ; Pl. 3, fig. 280 ; Map 2)

DESCRIPTION. ♂, ♀. Similar to *carnea* externally and in the degree of individual variation of the coloration of the wings (Plate 3, fig. 280).

♂ GENITALIA (Text-figs. 50-52) : valve process long, arcuate ; posterior processes of uncus short, acuminate.

♀ GENITALIA (Text-fig. 53) : dorsal lobes of eighth segment with irregular medial edge dorsally.

MEASUREMENTS. A.P.R. : ♂. 19 ; ♀. 17. Wing : ♂. 18.0, 17.0-20.0 mm. (4) ; ♀. 20.0, 19.5-21.0 mm. (3).

DISCUSSION. This species is probably most closely related to *graciosa* from which it can be distinguished by the colour-pattern of the wings and by the genitalia. It also has close affinities with *carnea*, which has an apparently identical colour-pattern but distinctive genitalia, and with *notialis*, an African species, which differs both in colour-pattern and genitalia.

The type of individual variation is similar to that found in *carnea*. In one specimen of *griveaudi* the medial shade is nearly black at the anal margin of both wings, as in two specimens of *carnea*.

One male and one female from the Comores, in the collection of the Muséum national d'Histoire naturelle, Paris, probably represent a new subspecies of *griveaudi*, but further material is needed before this can be confirmed.

DISTRIBUTION (Map 2). Eastern and western MADAGASCAR.

MATERIAL EXAMINED. Type. Holotype ♂, E. MADAGASCAR, Andranomandevy Didy, Ambatondrazaka, 1,039 m., 28.ix.56 (*Griveaud*) ; Drepanidae genitalia slide No. 596 ; in the Muséum national d'Histoire naturelle, Paris.

Paratypes. Muséum national d'Histoire naturelle, Paris. E. MADAGASCAR : 1 ♀, Env. de Périnet, forêt d'Analamazoatra, 910 m., 19.ii.1955 (*Viette*). W. MADAGASCAR : 1 ♂, 1 ♀, Ankarafantsika, Ampijoroa, 120 m., 30.viii.1956, i.1957 (*Griveaud*) ; 2 ♂, dct. Antsalova, forêt Antsingy, Andobo, 190 m., ii.1957 (*Griveaud*). Institut scientifique, Madagascar. W. MADAGASCAR : 1 ♂, Ankarafantsika, Ampijoroa, 170 m., i.1957 (*Griveaud*) ; 1 ♂, dct. Antsalova, forêt Antsingy, Andobo, ii.1957 (*Griveaud*).

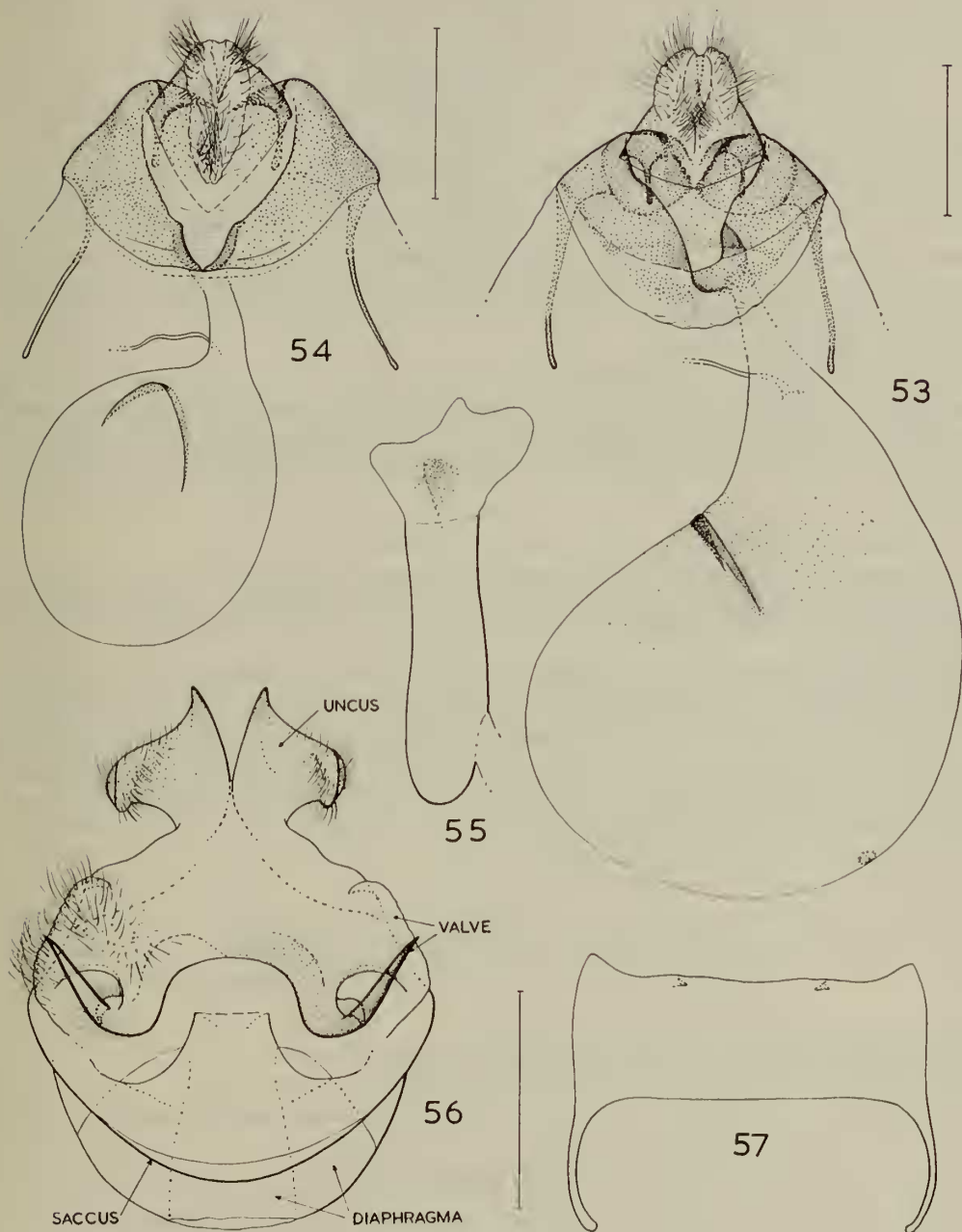
*Epicampoptera graciosa* sp. n.

(Text-figs. 54-57 ; Pl. 3, fig. 281 ; Map 2)

DESCRIPTION. ♂. Outer surface of palp dark brown, inner surface buff. Antenna buff. Head buff, except for greyish brown area extending from base of antennae to a line midway between antennae and labrum (holotype) or extending over whole of front of head.

Wing venation as for *tumidula*. Wing shape and colour-pattern as in Plate 3, fig. 281. Markings stronger than in most specimens of *carnea* and *griveaudi*. Subterminal markings on upper surface of hind wing conspicuous, sometimes present between  $M_1$  and  $M_2$  and between  $Cu_{1a}$  and  $Cu_{1b}$  (not in holotype), apparently always present as two elongate spots between  $M_3$  and  $Cu_{1a}$ . Under surface of both wings buff (holotype) or pale orange, striate and speckled with very dark brown especially at apex and in distal half of wings ; trace of discocellular spot in both wings ; well marked postmedial fascia on fore wing, trace of this fascia on hind wing.





FIGS. 53-57, *Epicampoptera*, genitalia. 53, *griveaudi*, ♀. 54-57, *graciosa*. 54, ♀; 55, aedeagus; 56, ♂; 57, ♂ eighth abdominal sternite.

Thorax pale brown dorsally, with almost white patagial vestiture. Ventral surface pale buff except for brown fringe posterior to eyes. Legs pale buff, with front surface of prothoracic femur and tibia brown.

♂ GENITALIA (Text-figs. 55-57) : valve process short, arcuate ; posterior processes of uncus short bluntly pointed, ventro-lateral processes with pre-apical bulge.

♀. Similar to male but larger and with outer margin of both fore and hind wing less strongly produced between  $M_3$  and  $Cu_{1a}$ .

♀ GENITALIA (Text-fig. 54) : dorsal lobes of eighth segment weakly striate medially.

MEASUREMENTS. A.P.R. : ♂. 19 ; ♀. 17. Wing : ♂. 18.0 mm. (2) ; ♀. 20.5 mm. (2).

DISCUSSION. *E. griveaudi* is probably the closest relative of this species, although *carnea* and *notialis* are also closely related to *graciosa*. The strongly marked subterminal spots on the upper surface of the hind wings distinguish *graciosa* from the remaining Madagascan species and from most specimens of *notialis*. The genitalia of both sexes are diagnostic.

There is insufficient material to permit comment on the extent of individual variation. The upper surface of the wings of the specimens from Périnet and Ankasoka have a brownish buff ground-colour with a reddish brown medial shade, whereas the example from Antsianaka is pale reddish brown with a darker medial shade.

DISTRIBUTION (Map 2). Known only from eastern MADAGASCAR.

MATERIAL EXAMINED. Type. Holotype ♂, MADAGASCAR, Périnet, iii.1935 (*Olsonieff*) ; Drepanidae genitalia slide No. 1158 ; in the British Museum (Natural History).

Paratypes. *British Museum (Natural History)*. E. MADAGASCAR : 1 ♀, Périnet, iii.1935 (*Olsonieff*) ; 1 ♀, Antsianaka et lac Aloatra, " 2<sup>e</sup> Trimestre ", 1889 (*Perrot*) ; 1 ♂, Route de Lakato, km. 15, Ankasoka, 1,100 m., 2-10.i.1959 (*Viette*). *Institut scientifique, Madagascar*. E. MADAGASCAR : 1 ♂, sud Moramanga, Ampitameloka, 840 m., 5.viii.1956 (*Griveaud*). S. MADAGASCAR : 1 ♀, dct. Fort Dauphin, Antanimora, 300 m., xii.1959 (*Rharizonina*).

### *Epicampoptera heterogyna* (Hampson)

(Text-figs. 58-61 ; Pl. 4, figs. 283, 284 ; Map 2)

*Metadrepāna heterogyna* Hampson, 1914 : 105.

*Epicampoptera heterogyna* (Hampson) ; Gaede in Seitz, 1927 b : 291.

*Epicampoptera heterogyna* (Hampson) ; Gaede, 1931 : 52.

DESCRIPTION. ♂. Outer surface of palp very dark brown, inner surface dull yellow ; front of head brownish buff (holotype) or reddish buff ventrally, dark brown dorsally ; vertex yellowish white ; antenna yellowish white proximally, grey distally.

Dorsal surface of thorax yellowish grey (holotype) or grey except for nearly white anterior margin ; ventral surface buff but with dark grey anterior margin. Front surface of fore trochanter dark buff (holotype) or pinkish buff, front surface of rest of fore leg grey (femur with pink fringe on inner surface in male from Mabira Forest), inner surface of leg buff ; femur, tibia and tarsus of remaining legs with pale grey (holotype) or pinkish grey outer surface and buff inner surface.

Ground-colour of surface of fore wing (Plate 4, fig. 283) yellowish grey (holotype) or grey, lustrous; dark markings yellowish brown (holotype) or dark reddish brown, non-lustrous; conspicuous black marking at anal margin (absent in lectotype and paralectotype; also present in holotype of *heringi*). Ground-colour of hind wing similar to fore wing but heavily speckled with dark brown and buff (holotype) or dark brown and pink; postmedial fascia pale buff; subterminal markings dark brown, non-lustrous.

Costal area under surface of fore wing greyish buff; rest of wing (except for pale buff area overlapped by hind wing) buff (holotype) or pink, becoming more greyish and striate with dark grey apical and distal to postmedial fascia; postmedial fascia and discocellular spot dark grey (holotype) or black. Under surface of hind wing pale buff with grey outer marginal area, pink between grey area and cell in male from Mabira Forest; discocellular spot as for fore wing; postmedial fascia grey, weakly marked, strongly convex distally.

Abdomen grey dorsally, buff ventrally.

♂ GENITALIA (Text-figs. 58-60): valve process long, stout, arcuate; posterior processes of uncus truncate.

♀ (Plate 4, fig. 284). Similar to male but outer marginal process absent on fore wing and much reduced on hind wing, and with postmedial fascia and subterminal fascia on upper surface of hind wing differently shaped. (Ground-colour of upper surface of wings of specimen from Entebbe reddish buff, and with dark marking at middle of anal margin on fore wing.)

♀ GENITALIA (Text-fig. 61): dorsal lobes of eighth segment not striate medially; ninth segment well sclerotized laterally and ventrolaterally.

MEASUREMENTS. A.P.R.: ♂, ♀. 19. Wing: ♂. 20.0 mm. (2); ♀. 22.5, 22.0-23.0 mm. (2).

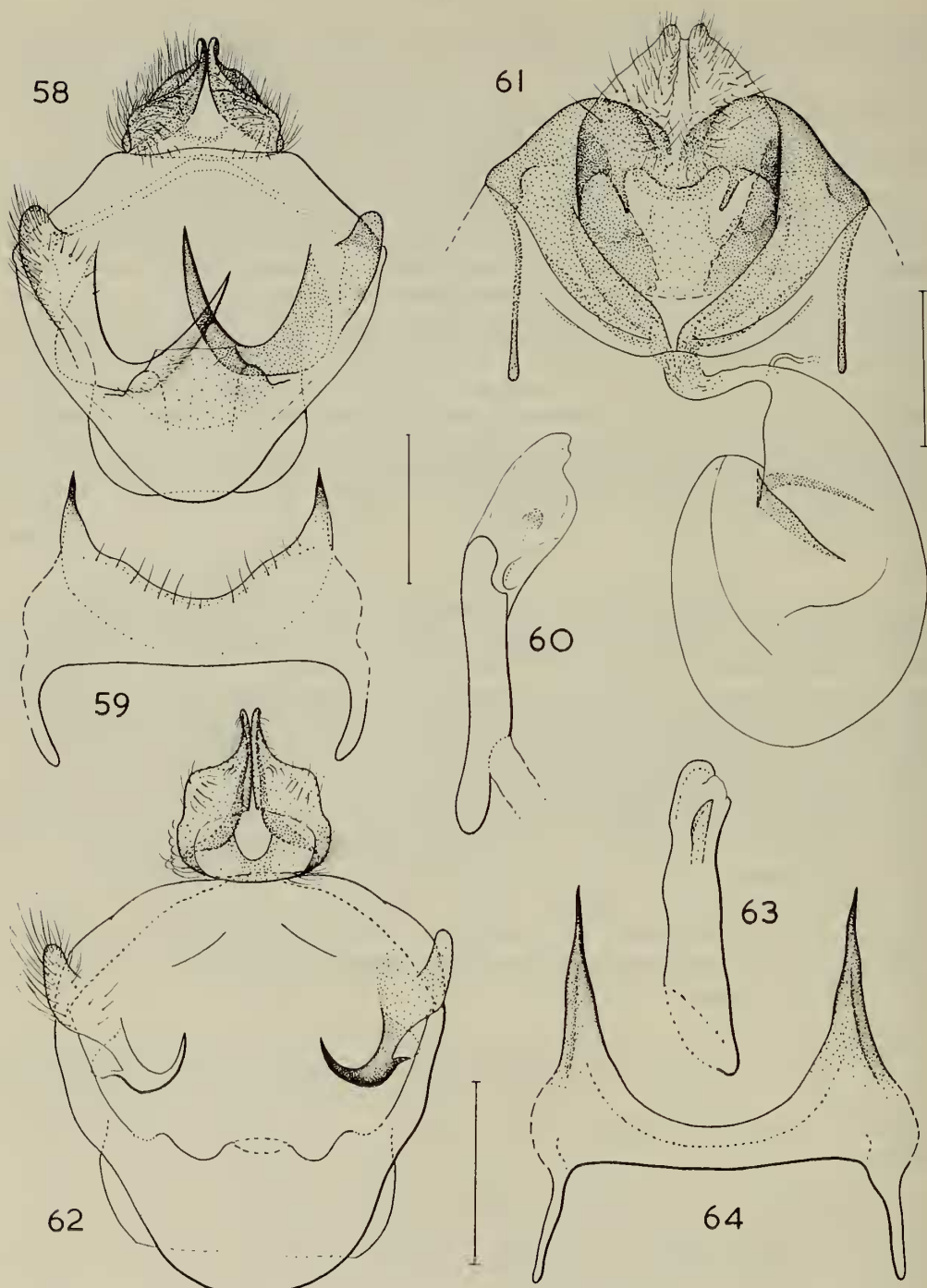
DISCUSSION. This species is closely related to the West African *heringi*. The colour-pattern of the wings is probably very similar to that of *heringi* although the latter is unfortunately known only from the worn holotype. The male genitalia, however, readily separate these two species: the shape of the valve processes, uncus and eighth sternum are particularly diagnostic. Until more material of both sexes is available I consider it better to treat *heringi* and *heterogyna* as species of a super-species than as subspecies of a single species.

A recent paper by Stempffer and Jackson (1962) has shown that the aquatic barrier between Bugalla Island (the type locality of *heterogyna*) and the mainland of Africa is sufficient to bring about subspeciation in three butterfly species. It is interesting in this respect to find no evidence of significant geographical variation in the few available specimens of *heterogyna*. The slight variation in coloration mentioned in the description may be due to fading of the original Hampson type material from Bugalla.

MATERIAL EXAMINED. Type. I have selected and labelled the male syntype as the LECTOTYPE. It bears the following data "Uganda, Victoria Nyanza, Sesse Is., Bugalla I., Carpenter, 1914-276; *Metadrepāna heterogyna* Hampson type ♂ Hmps; Drepanidae genitalia slide No. 1153"; in the British Museum (Natural History).

Paralectotype. 1 ♀, with same collection data as lectotype.

Other material. *Coryndon Museum, Nairobi*. UGANDA: 1 ♂, Jinja, Mabira Forest, x.1962 (*Carcasson*); 1 ♀, Entebbe, ix.1964 (*Burgess*).



FIGS. 58-64, *Epicampoptera*, genitalia. 58-61, *heterogyna*. 58, ♂; 59, ♂ eighth abdominal sternite; 60, aedeagus; 61, ♀. 62-64, *heringi*. 62, ♂; 63, aedeagus; 64, ♂ eighth abdominal sternite.



*Epicamptoptera heringi* Gaede

(Text-figs. 62-64 ; Pl. 4, fig. 285 ; Map 2)

*Epicamptoptera heringi* Gaede, 1927 a : 164.*Epicamptoptera heringi* Gaede ; Gaede in Seitz, 1927 b : 291. [Poor fig.]*Epicamptoptera heringi* Gaede ; 1931 : 52.

DIAGNOSIS. ♂. Due to the poor condition of the only known specimen (Plate 4, fig. 285) it is not possible to give an accurate comparison of external characters between *heringi* and the closely related *heterogyna*, but there seems to be no important difference between them in the colour-pattern of the wings. There is a large black marking at the anal margin of the fore wing of the holotype of *heringi*, as in the specimen of *heterogyna* from the Mabira Forest.

♂ GENITALIA (Text-figs. 62-64) : the much shorter valve processes, differently shaped uncus, and the less attenuate posterior processes of the eighth sternite separate it from *heterogyna*.

♀. Not known.

MEASUREMENTS. A.P.R. : ♂. (Antennae missing.) Wing : ♂. 19.5 mm. (1).

DISCUSSION. Closely related to *heterogyna* from the eastern side of Africa. I prefer to consider these two species as members of a superspecies than as subspecies, at least until further material of both sexes is available.

MATERIAL EXAMINED. Type. Holotype ♂, CAMEROUN ; Drepanidae genitalia slide No. 1298 ; in the Zoologisches Museum, Berlin.

SPECIES-GROUP *seydeli*

Venation as for species-group *erosa* (Text-figs. 1, 2).

♂ GENITALIA (see labelled Text-fig. 65) : each lobe of uncus with invaginate sac ; valve small, densely setose, nearly meeting opposite valve at medial line ; diaphragma not pouch-like ; aedeagus with one or more longitudinal carinae or sulci ; eighth sternum asymmetric. Signum of female genitalia probably as for species-group *erosa* (see below).

The only known species are *seydeli* and *lumaria*. Both are African. The distinctive male genitalia of this group (Text-figs. 65-70) distinguish it from the species-group *erosa*, though there are apparently no structural differences other than those in the male genitalia.

The fore wing venation and the probability of a close resemblance in the shape of the signum in the female genitalia (see note on the single female from Fernando Po on page 45, which probably belongs to this species-group) suggest that this group is more closely allied to the species-group *erosa* than to *strandii*.

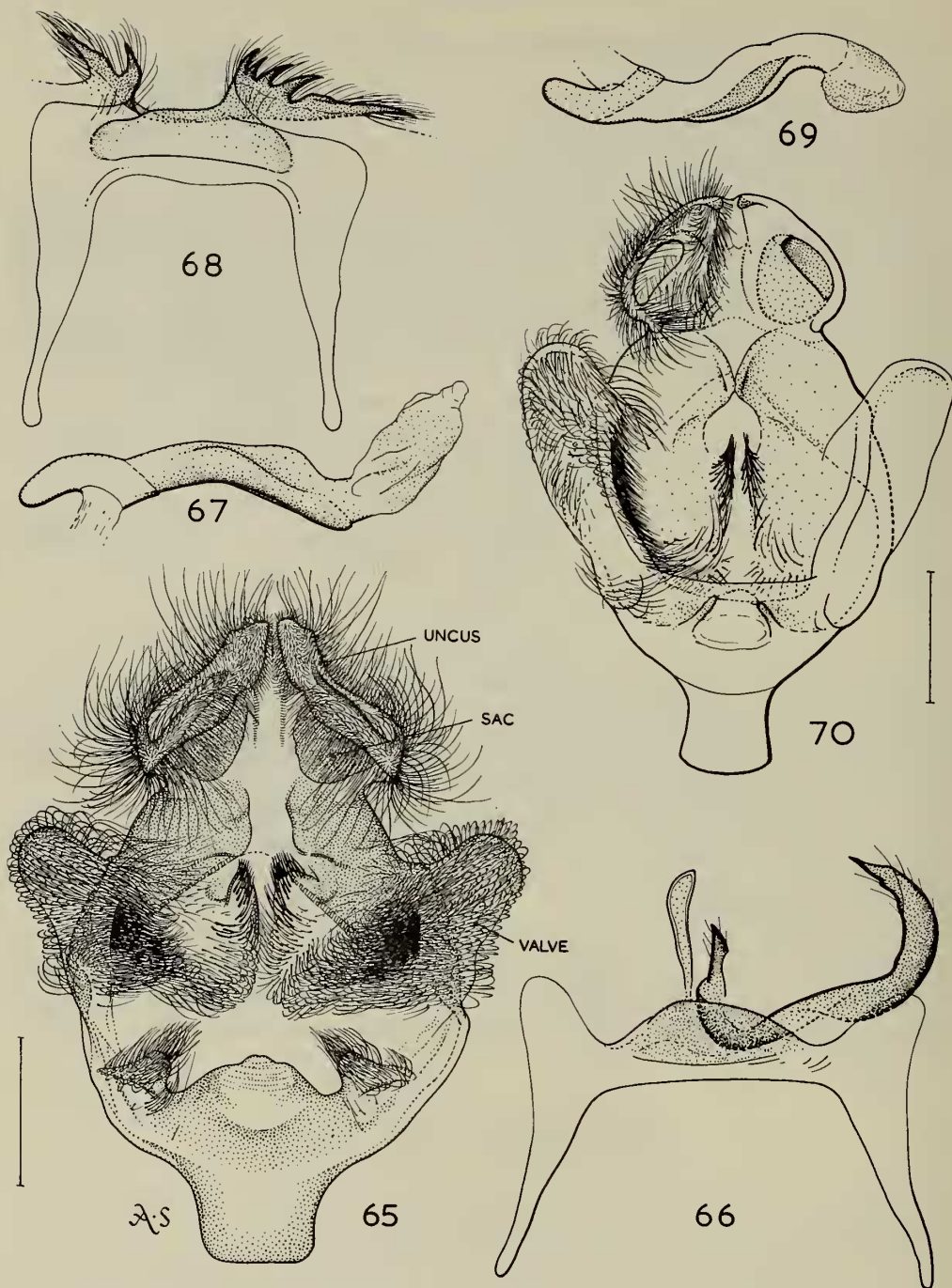
*Epicamptoptera seydeli* sp. n.

(Text-figs. 65-67 ; Pl. 2, fig. 278)

DESCRIPTION. ♂. Outer surface of palp greyish brown, inner surface pinkish buff ; front of head greyish brown, vertex pinkish brown ; antenna very pale buff.

Thorax pinkish brown dorsally, pale pinkish buff ventrally. Front surface of fore legs greyish brown, remaining legs and inner surface of fore leg pale pinkish buff. Wing shape and colour-pattern as in Plate 2, fig. 278. Ground-colour of upper surface of wings pale pinkish buff ; postmedial fascia dark grey, edged distally with greyish white ; remaining markings reddish brown. Under surface of both wings dull pink, lightly speckled with very dark brown ;





FIGS. 65-70, *Epicamptoptera*, ♂ genitalia. 65-67, *seydeli*. 65, ♂; 66, eighth abdominal sternite; 67, aedeagus. 68-70, *lumaria*. 68, eighth abdominal sternite; 69, aedeagus; 70, ♂.

discocellular spot very dark brown on both wings ; postmedial fascia grey and dark brown, less well marked on hind wing.

Colour of abdomen as for corresponding surface of hind wing.

♂ GENITALIA (Text-figs. 65–67) : setose lobe present at either side of anellus ; eighth sternum asymmetric, posterior sclerites closely connected to main sclerite but not fused with it.

♀. Not known.

MEASUREMENTS. A.P.R. : ♂. 14. Wing : ♂. 18.5, 18.0–19.0 mm. (4).

DISCUSSION. Distinguished from *lumaria* by the broader saccus and differently shaped valves, uncus, aedeagus and eighth sternum. There appears to be no important external diagnostic feature.

DISTRIBUTION. Known only from the type locality.

MATERIAL EXAMINED. Type. Holotype ♂, CONGO, Elisabethville, 6.iv.1951 (*Seydel*) ; Drepanidae genitalia slide No. 1152 ; in the Musée Royal de l'Afrique centrale, Tervuren.

Paratypes. *British Museum (Natural History)*. CONGO : 1 ♂, Elisabethville, 28.iii.1952 (*Seydel*). *Carnegie Museum, Pittsburgh*. CONGO : 2 ♂, Elisabethville, 26.i.1949, 6.iv.1953 (*Seydel*).

### *Epicampoptera lumaria* sp. n.

(Text-figs. 68–70)

DESCRIPTION. ♂. Externally as for *seydeli*, except for coloration of upper surface of wings which are pale brown in ground-colour and have yellowish brown markings except for the white and grey postmedial fascia.

♂ GENITALIA (Text-figs. 68–70) : anellus forming lateral lip on either side ; setose lobe at side of anellus small ; aedeagus with deep, longitudinal sulcus on one side ; posterior processes of eighth sternite asymmetric.

♀. Not known. (But see Distribution.)

MEASUREMENTS. A.P.R. : ♂. 19. Wing : ♂. 17.5 mm. (1).

DISCUSSION. Separated from *seydeli* apparently only by the male genitalia ; in particular by the markedly different eighth sternite, but also by the saccus, valves, anellus, uncus and aedeagus.

DISTRIBUTION. CAMEROUN. A female from Fernando Po in the collection of the British Museum (Natural History) may prove to belong to this species when more material is available for comparison.

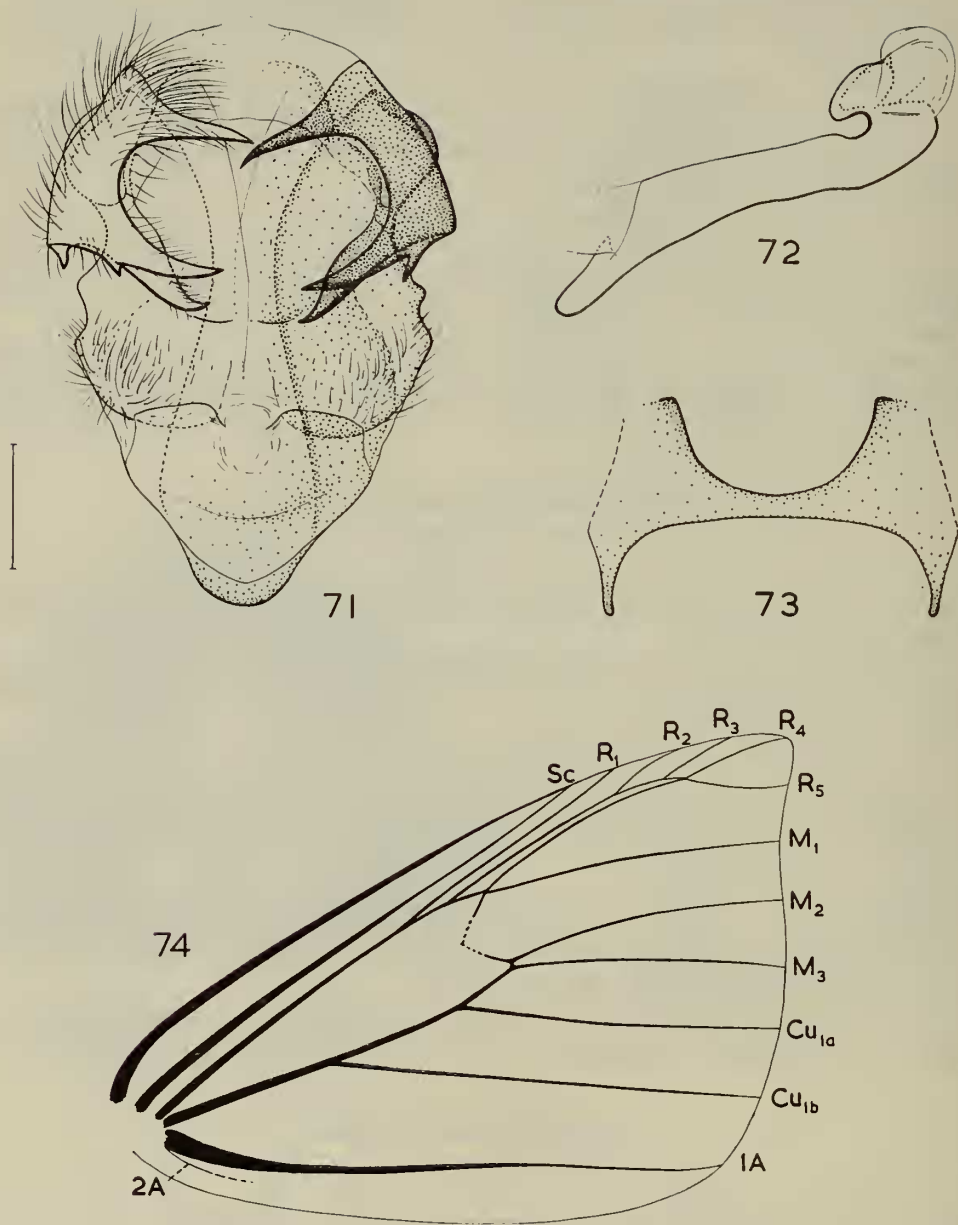
MATERIAL EXAMINED. Type. Holotype ♂, CAMEROUN, Efulen, 29.xii.1919 (*Weber*) ; Drepanidae genitalia slide No. 1554 ; in the Carnegie Museum, Pittsburgh.

### *Epicampoptera efulena*

(Text-figs. 71–73 ; Pl. 17, fig. 342)

DESCRIPTION. ♂. Outer surface of palp and vestiture of head posterior and ventral to eyes very dark brown ; front and vertex of head brownish buff ; antenna, and inner surface of palp brownish buff.

Dorsal surface of thorax yellowish brown anteriorly, the scales highly lustrous ; colour doubtful posteriorly. Ventral surface of thorax pale buff. Front surface of fore leg dark brown with



FIGS. 71-73, *Epicamptoptera efulena*, ♂ genitalia. 71, ♂; 72, aedeagus; 73, eighth abdominal sternite. FIG. 74, *Negera quadricornis*, ♂ fore wing venation.

medially directed reddish brown fringe ; rest of leg pale buff. Colour of remaining legs doubtful, but probably similar to fore leg.

Venation as for species-group *erosa*. Ground-colour of upper surface of fore wing yellowish brown ; speckled with highly lustrous scales, most densely at base at costal area ; very pale brown medial area bordered proximally with dark reddish brown, and with reddish brown streak extending from it distally between anterior angle of cell and apex ; small brown discocellular spot ; postmedial fascia narrow, pale. Upper surface of hind wing yellowish brown (much paler anteriorly in area overlapped by fore wing) lightly speckled with highly lustrous scales posteriorly ; discocellular spot small, brown ; pale postmedial fascia strongly concave ; weakly marked brown subterminal spot between  $M_3$  and  $Cu_{1a}$ . (Plate 17, fig. 342.)

Under surface of both fore and hind wings pale buff, lightly speckled with dull pink scales (most conspicuous along veins) ; speckled with dark grey at apex, outer margin and proximal half of costal area in fore wing, and over whole of hind wing except along anal margin. Both wings with conspicuous dark grey discocellular spot and postmedial fascia.

Colour of abdomen doubtful.

♂ GENITALIA (Text-figs. 71-73) : vinculum strongly developed, the two sides closely apposed along mid-dorsal line, produced posteriorly on either side into heavily sclerotized, trifurcate, claw-like structure ; diaphragma almost completely sclerotized, membranous only along medial line where it is weakly sulcate ; uncus absent ; aedeagus sharply recurved apically, vesica without ornamentation ; posterior margin of eighth sternite strongly concave ; apodemes moderately long.

♀. Not known.

MEASUREMENTS. A.P.R. : ♂. 9. Wing : ♂. 24.0 mm. (1).

DISCUSSION. Without knowledge of the female it is difficult to assess the taxonomic position of this species. The venation of the fore wing is similar to that of the species-groups *erosa* and *seydeli* but the male genitalia are so different from those of *erosa* or *seydeli* that it is impossible to place *efulena* in either of them. It is difficult to see how the curious, paired, clawed structures of the male genitalia of this species could have been derived from the uncus or valves of any known species of *Epicampoptera*.

DISTRIBUTION. Known only from the type locality.

MATERIAL EXAMINED. Type. Holotype ♂, CAMEROUN, Efulen, 13.xi.1912 (Weber) ; Drepanidae genitalia slide No. 1529 ; in the Carnegie Museum, Pittsburgh.

### **NEGERA** Walker

(Text-figs. 74-108 ; Pls. 5, 6, figs. 287-294 ; Map 3)

*Negera* Walker, 1855 : 1171. Type-species, by monotypy, *Negera confusa* Walker, 1855.

*Negera* Walker ; Gaede in Seitz, 1927 b : 289.

*Negera* Walker ; Gaede, 1931 : 51.

*Ctenogyna* Felder, 1874. Type-species, by monotypy, *Ctenogyna natalensis* Felder, 1874.

[Junior homonym of *Ctenogyna* Macquart, 1838 (Diptera).]

*Ctenogyne* Felder ; Gaede in Seitz, 1927 b : 288. [Incorrect subsequent spelling.]

*Ctenogyne* Felder ; Gaede, 1931 : 50.

*Ctenogyne* Felder ; Gaede, 1931 : 53.

*Pithania* Bryk, 1913 : 8. Type-species, by monotypy and original designation, *Ancistrota geometroides* Holland. **syn. n.**

*Pithania* Bryk ; Strand, 1932 : 145. [As replacement name for *Ctenogyna* Felder.]

*Ancistrina* Gaede in Seitz, 1927 b : 288. Type-species, by original designation, *Ancistrina immaculata* Gaede, 1927. **syn. n.**

*Ancistrina* Gaede ; Gaede, 1931 : 50.



DESCRIPTION. ♂. Labrum globose, proboscis vestigial ; palp extending short distance above labrum ; antenna bipectinate from base of flagellum to apex, A.P.R. 14 to 23.

Thorax as for ground-colour of fore wings dorsally, much paler ventrally. Mid and hind tibia each with one pair of terminal tibial spurs.

Costa of fore wing weakly or moderately convex ; apex a right-angle or weakly falcate ; outer margin slightly convex in most species but nearly straight in *bimaculata*. Outer margin of hind wing convex except in *natalensis* in which the margin is angulate and weakly produced at  $M_3$ . Venation of fore wing as in Text-fig. 74 ;  $R_{2+3+4}$  on common stalk,  $R_5$  closely approximates to  $R_4$  at point shortly after  $R_4$  branches from  $R_{3+4}$ . In hind wing  $Sc + R_1$  closely approximates to  $R_s$  for short distance distal to end of cell. Upper surface of both wings one of many shades of brown, buff or grey, usually only lightly speckled with black or dark brown. Costa of fore wing with dark marking near apex, second marking short distance proximal to first, and third just proximal to middle of costa ; brown or black spot close to cell between  $Cu_{1b}$  and  $2A$  (invariably present in *natalensis*, sometimes present in remaining species) ; dark discocellular spot ; trace of antemedial fascia ; well marked, oblique postmedial fascia ; weakly marked subterminal fascia. Hind wing sometimes with trace of antemedial fascia ; well marked medial fascia, continuous with postmedial fascia of fore wing except in *natalensis* ; weakly marked subterminal fascia. Under surface of both wings light brown, buff, orange or yellow, lightly and variably speckled with a darker colour. Fore wing with dark discocellular spot and well marked postmedial fascia positioned slightly proximal to corresponding fascia of upper surface. Hind wing with dark discocellular spot ; trace of postmedial fascia, placed distal to medial fascia of upper surface, strongly convex distally ; faintly marked subterminal markings in some specimens best developed in *natalensis*. (See Plates 5 and 6.)

Abdomen as for ground-colour of wings dorsally, very pale laterally, usually pinkish or yellowish buff ventrally.

♂ GENITALIA (see labelled Text-fig. 106) : posterior margin of tegumen strongly concave ; saccus variously shaped ; valve setose, with or without processes ; setose uncus divided medially, each half with posteromedial spine or bulge ; gnathus with strongly developed lateral arms and pair of posteromedial processes ; aedeagus variously shaped and ornamented ; apodemes of eighth abdominal sternum short, posterior margin of sternum emarginate medially.

♀. Differs from male in following respects : antenna less strongly pectinate, A.P.R. 10 to 17 ; outer margin of fore wing strongly convex ; apex of fore wing moderately or strongly falcate.

♀ GENITALIA : ostial and post-ostial segments heavily sclerotized, variously shaped ; bursa copulatrix with single, internally concave, scobinate signum or pair of signa.

DISCUSSION. *Negera*, erected by Walker, 1855, has until now remained monotypic. *Ctenogyna*, which included a single new species, *natalensis*, was established in 1874 by Felder. *Ctenogyna* Felder, however, is a junior homonym of *Ctenogyna* Macquart, 1838 (Diptera) and was replaced by *Pithania* Bryk (Strand, 1932 : 145). *Pithania* Bryk, 1913, type-species, by monotypy, *Ancistrota geometroides* Holland, has now been placed in the synonymy of *Negera*. *Ancistrina* Gaede, 1927 b, which is also treated as a junior synonym of *Negera* in this revision, was erected for two new species, *immaculata* and *bimaculata*.

The name *carnea* Saalmüller, which was listed as a junior synonym of *natalensis* Felder by Gaede (1927 b and 1931), is correctly applied to a species of *Epicampoptera* Bryk (see page 36).

The genus as it now stands contains eight species. Five of these are new.

The presence of a globose labrum in both *Negera* and *Epicampoptera* and similarities in the colour-pattern of the wings between these two genera suggest certain affinities. *Epicampoptera* is, however, easily separated from *Negera* by the genitalia, the shape of the wings and the fore wing venation.



The males of *confusa*, *disspinosa*, *ramosa*, *unispinosa* and *clenchi* are apparently almost identical externally. Because of this similarity in the males and the overlapping of ranges, I have been able to identify only *unispinosa* from the available badly worn female material. Apart from the latter species, four groups of females have been separated out, but the association of these with the corresponding males has not been found possible.

The species *natalensis* is polytypic.

There is much variation in the ground-colour of both surfaces of the wings and in the colour of the wing markings, particularly in the group of species mentioned above which are externally similar to *confusa*.

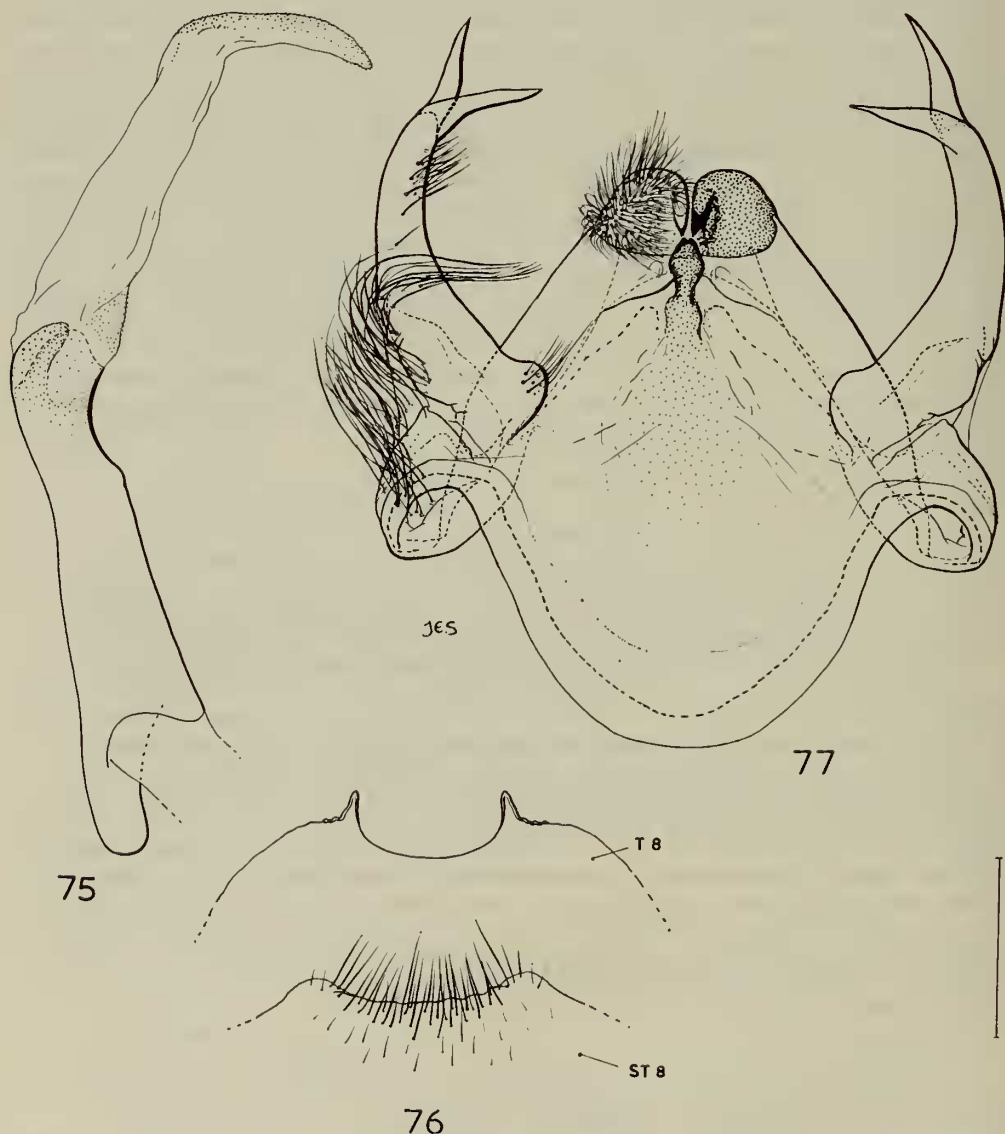
*Negera* is mainly restricted to the lowland rain-forest of central and west Africa and the areas of montane forest in east Africa, but with some species also represented in relatively moist woodland bordering the forested regions. The species *bimaculata* and *confusa* are chiefly west African and confined to rain-forest or neighbouring woodland; *ramosa* and *quadricornis* occur in the Congo Basin and also in two forested areas (one montane) in Uganda; *disspinosa* and *unispinosa* are at present only known from the rain-forest of Cameroun and the montane forest of Mt. Elgon (Uganda) respectively; *natalensis* has a much wider distribution extending from Gambia and Senegal throughout the west and central African rain-forest regions to Tanganyika (Arusha, edge of montane forest) and south along the east coastal forest-savanna belt of Natal and Cape Province.

#### KEY TO SPECIES

##### MALES

- 1 A.P.R. 23; outer margin of hind wing produced at  $M_3$  (Plate fig. 294); postmedial fascia of fore wing strongly lunulate; medial fascia of hind wing arcuate anteriorly. Lateral arms of gnathus massive, membranous medial part of diaphragma small (Text-fig. 101) . . . . . ***natalensis*** (p. 63)
- A.P.R. 14–21; outer margin of hind wing not produced at  $M_3$ ; postmedial fascia of fore wing straight or very weakly lunulate; medial fascia of hind wing straight. Lateral arms of gnathus much less massive than above; membranous medial part of diaphragma broad (e.g. Text-fig. 92) . . . . . 2
- 2 Outer margin of fore wing nearly straight, apex weakly falcate (Plate 6, fig. 291) . . . . . ***bimaculata*** (p. 62)
- Outer margin of fore wing weakly convex, apex very weakly falcate or non-falcate . . . . . 3
- 3 Valve strongly bifurcate (Text-fig. 92); ornamentation of aedeagus as in Text-fig. 91; eighth tergite as in Text-fig. 93 . . . . . ***quadricornis*** (p. 60)
- Valve not strongly bifurcate; aedeagus not as above . . . . . 4
- 4 Valve short, without spines or with single, short spine; ornamentation of aedeagus as in Text-figs. 78 or 81 . . . . . 5
- Valve elongate, with spines or elongate processes; ornamentation of aedeagus not as above . . . . . 6
- 5 Valve without spine; medial processes of gnathus long, pointed (Text-fig. 80); aedeagus as in Text-fig. 78; eighth tergite and sternite as in Text-fig. 79 . . . . . ***disspinosa*** (p. 53)
- Valve with single, short spine; medial process of gnathus short, blunt (Text-fig. 82); aedeagus as in Text-fig. 81; eighth sternite and tergite as in Text-fig. 83 . . . . . ***clenchi*** (p. 55)

- 6 Apex of valve bifurcate or branched ; eighth tergum with two posterior processes . . . . . 7  
 - Apex of valve simple ; eighth tergum with three posterior processes (Text-fig. 89) *unispinosa* (p. 57)  
 7 Valve bifurcate apically ; vesica of aedeagus with minute scobinations ; eighth tergite with short posterior processes (Text-figs. 75-77) . . . . . *confusa* (p. 51)  
 - Valve with one long and several short apical branches ; vesica of aedeagus distinctly ornamented ; posterior processes of eighth tergite elongate (Text-figs. 84-86) *ramosa* (p. 55)



FIGS. 75-77, *Negeva confusa*, ♂ genitalia. 75, aedeagus ; 76, posterior margin of eighth abdominal tergite and sternite ; 77, ♂.

***Negera confusa* Walker**  
(Text-figs. 75-77 ; Map 3)

*Negera confusa* Walker, 1855 : 1172.

*Negera confusa* Walker ; Gaede in Seitz, 1927 b : 289.

*Negera confusa* Walker ; Gaede, 1931 : 51.

*Ctenogyna lytaea* Druce, 1896 : 356. **syn. n.**

DESCRIPTION. ♂. Outer surface of palp brown, inner surface light brown. Front of head brown ; vertex brown, becoming more yellowish posteriorly ; narrow, brown band bordering outer lateral margin of eye. Upper surface of antennal shaft very pale buff.

Dorsal surface of thorax pale pinkish brown, palest anteriorly ; ventral surface very pale buff. Outer surface of trochanter of fore leg pale reddish brown ; outer surface of rest of fore leg brown ; inner surface of whole of fore leg very pale buff ; colour of remaining legs doubtful.

Shape of fore wing as for *disspinosa* (Plate 5, fig. 290). Colour-pattern of upper surface of type as for Plate 5, fig. 288 of *quadricornis* ; base of upper surface buff in most specimens (including holotype) ; trace of antemedial fascia ; area between antemedial fascia and postmedial fascia reddish brown (holotype and one other specimen) or yellowish brown enclosing large lustrous, paler, purplish brown area ; small, black discocellular spot ; large, dark spot close to cell between  $Cu_{1b}$  and  $1A$  (brown in holotype and one specimen, black in two specimens, weakly marked in remainder) ; postmedial fascia buff, edged proximally with brown (holotype and most specimens) or black (one specimen), less strongly edged distally with lighter colour ; area distal to postmedial fascia reddish or yellowish brown near apex and tornus, buff in middle ; sub-terminal fascia represented by short, whitish dashes on veins  $M_3$  to  $1A$  ; costa of fore wing and area between antemedial and postmedial fasciae conspicuously lustrous ; whole wing lightly speckled with black (strongly speckled in one specimen, as in Plate 5, fig. 290 of *disspinosa*). Upper surface of hind wing similar to fore wing in coloration of medial fascia and area proximal to this, but without pale medial patch ; ground-colour of rest of wing similar, but darker at outer angle ; black discocellular spot ; trace of broad, irregular, dark fascia between medial fascia and outer margin in holotype and one other example ; wing lustrous except for marginal band extending short distance posteriorly from outer angle.

Under surface of fore wing pale yellowish brown (holotype) or pale brownish orange ; lightly speckled with black or dark grey, most densely speckled along costa and at tornus ; outer marginal band yellow between apex and  $Cu_{1a}$ , orange or red between  $Cu_{1a}$  and tornus ; dark grey, oblique postmedial fascia from near apex to about two-thirds distance from base along anal margin, faintly edged distally with a pale line and then a dark line. Ground-colour of under surface of hind wing similar to fore wing but paler ; lightly speckled with dark grey or black, most heavily at costa ; well marked, black discocellular spot ; otherwise unmarked.

♂ GENITALIA (Text-figs. 75-77) : medial part of gnathus with two short teeth posteriorly ; gnathus extended anteriorly into diaphragma ; valve bifurcate apically ; apex of vesica of aedeagus with minute scobinations at apex and at one side of base ; posterior processes of eighth tergum short.

♀. Not known.

MEASUREMENTS. A.P.R. : ♂. 18. Wing : ♂. 21.0, 19.0-23.0 mm. (8).

DISCUSSION. I have selected and labelled as LECTOTYPE of *lytaea* a male syntype from the Druce collection in the British Museum (Natural History). It bears the following data "*Ctenogyna* [*sic*] *lytaea* Type Druce ; Fantee, West Africa, Shelley ; Drepanidae genitalia slide No. 1074". The name *lytaea* was placed in the synonymy of *natalensis* by Gaede (1927 b : 288) but an examination of the lectotype of *lytaea* has shown that it is conspecific with the holotype of *confusa*.

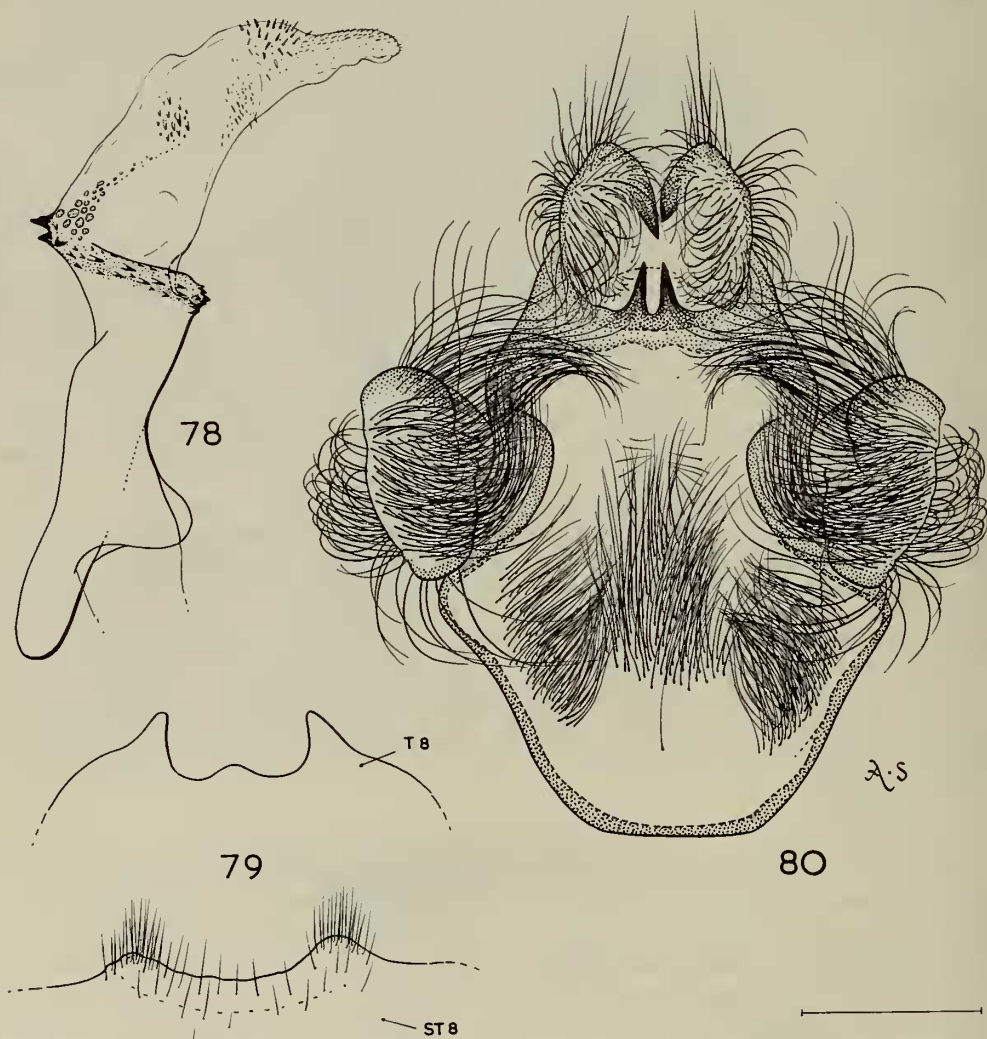
Distinguished by the male genitalia from *ramosa*, *unispinosa*, *disspinosa* and *clenchi*, all of which are apparently externally identical to *confusa*. The genitalia

most closely resemble those of *ramosa* but differ in the shape of the valves, uncus, gnathus, eighth tergite and sternite, and in the shape and ornamentation of the aedeagus.

The high degree of individual variation in coloration is mentioned in the description.

DISTRIBUTION (Map 3). GAMBIA, SIERRA LEONE, GHANA, IVORY COAST, NIGERIA and CAMEROUN.

MATERIAL EXAMINED. Types. Holotype ♂ of *confusa*, WEST AFRICA ; Drepanidae genitalia slide No. 1069 ; lectotype ♂ of *lytaea*, (see Discussion) GHANA,



FIGS. 78-80, *Negera dissipinosa*, ♂ genitalia. 78, aedeagus ; 79, posterior margin of eighth abdominal tergite and sternite ; 80, ♂.



Fantee (*Shelley*) ; Drepanidae genitalia slide No. 1074. Both types in the British Museum (Natural History).

Paralectotypes of *lytaea*. *British Museum (Natural History)*. GAMBIA : 1 ♂ (*Moloney*). NIGERIA : 1 ♂, Lagos (*Moloney*).

Other material. *British Museum (Natural History)*. SIERRA LEONE : 1 ♂ (*Thompson*). IVORY COAST : 1 ♂ Bingerville, 15-28.ix.1915 (*Mélou*). NIGERIA : 1 ♂ ; 1 ♂, Lagos, vi.1955 (*Boorman*). CAMEROUN : 1 ♂, Bitje, Ja River, x (*Bates*). *Carnegie Museum, Pittsburgh*. SIERRA LEONE : 1 ♂, 10.viii.1895 (*Clements*).

### *Negera dissipinosa* sp. n.

(Text-figs. 78-80 ; Pl. 5, fig. 290 ; Map 3)

DESCRIPTION. ♂ (Plate 5, fig. 290). Colour of head appendages, thorax and wings as for *confusa*. Coloration of wings similar to *confusa* ; colour-pattern subject to individual variation (see below). Outer surface of prothoracic tarsus brown or brownish buff, outer surface of rest of leg brownish orange, orange or pale orange (holotype) ; remainder of leg pale buff. Colour of mid and hind legs doubtful.

♂ GENITALIA (Text-figs. 78-80) : valve concave medially, densely setose, without acuminate processes ; diaphragma weakly sclerotized, setose anteromedially ; uncus asymmetric, gnathus with acuminate medial processes, not produced anteriorly into diaphragma ; aedeagus distinctively ornamented apically, vesica with three patches of spines ; eighth sternum as in Text-fig. 79 ; eighth tergum with short medial process and pair of larger rounded processes.

♀. Not known.

MEASUREMENTS. A.P.R. : ♂. 19. Wing : ♂. 21.5, 20.5-22.5 mm. (4).

DISCUSSION. This species, though externally indistinguishable from *confusa*, *clenchi*, *ramosa* and *unispinosa* is readily distinguished by the male genitalia. The shape of the valve and aedeagus is particularly diagnostic. The species *clenchi* is probably the closest relative of *dissipinosa*.

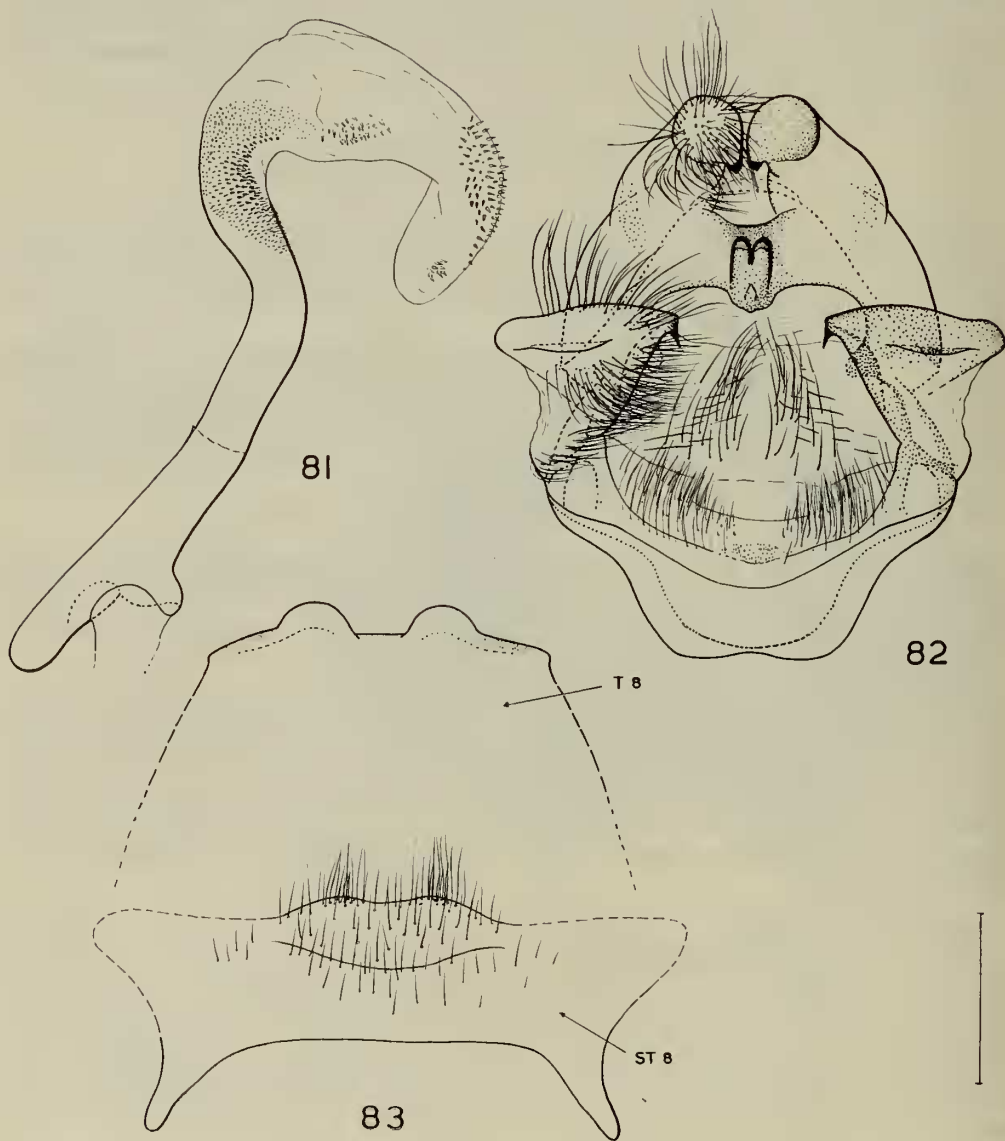
The extent of individual variation in the coloration of the upper surface of the wings is similar to that in *confusa*. In the holotype and the paratype from Gabon the large spot close to the cell between  $Cu_{11}$  and 1A is black and there is a scattering of silvery white scales along the outer margin of both wings. The paratype from Ilesha has numerous black markings between the medial fasciae on the fore wing (Plate 5, fig. 290). The remaining paratype (from Kumasi) has no black maculations on the fore wing.

DISTRIBUTION (Map 3). GHANA, NIGERIA and GABON. A male from CAMEROUN and another from the CONGO probably also represent this species. The Congo male may prove to belong to a new subspecies of *dissipinosa* when more material is available for comparison. The taxonomic position of the Cameroun specimen however, is doubtful : the genitalia, which may be aberrant, differ from those of the holotype in the more elongate medial processes of the gnathus and the absence of the small medial process at the posterior margin of the eighth abdominal sternum.

MATERIAL EXAMINED. Type. Holotype ♂, NIGERIA, Old Calabar ; Drepanidae genitalia slide No. 1076 ; in the British Museum (Natural History).



Paratypes. *British Museum (Natural History)*. GHANA : 1 ♂, Coomassie [Kumasi] (*Whiteside*). NIGERIA : 1 ♂, Ilesha (*Humfrey*). GABON : 1 ♂, Tchibanga (*Rougeot*).



FIGS. 81-83, *Negera clenchi*, ♂ genitalia. 81, aedeagus ; 82, ♂ ; 83, eighth abdominal segment (sternite and posterior margin of tergite).

*Negera clenchi* sp. n.

(Text-figs. 81-83 ; Map 3)

DESCRIPTION. ♂. Outer surface of palp dark greyish brown, inner surface reddish buff ; front of head pale reddish buff ventrally, greyish brown dorsally ; vertex greyish brown between base of antennae, pale buff posteriorly ; head with dark brown fringe posterior and ventral to eyes ; antennae very pale buff.

Dorsal surface of thorax pale buff, palest anteriorly ; ventral surface very pale buff. Outer surface of fore trochanter pale scarlet, outer surface of rest of fore leg pale brown and scarlet ; outer surface of mid and hind legs pale scarlet ; inner surface of all legs very pale buff.

Shape of fore wing as in Plate 5, fig. 290 of *dissipinosa*. Colour-pattern of both surfaces of fore and hind wings as *confusa*. Upper surface of fore wing buff (palest at base of wing and at outer margin distal to  $Cu_{1a}$ ) with lustrous, pinkish medial area ; large black spot near base of wing between  $Cu_{1b}$  and  $1A$  ; black discocellular spot and apical marking, and black speckling at anal angle. Upper surface of hind wing mainly pinkish buff speckled distally with dark brown and black but reddish brown at outer angle ; speckled with white scales distally between  $M_2$  and  $Cu_{1b}$ . Under surface of fore wing orange-scarlet, with buff costa ; speckled with dark grey, most strongly at anal angle ; postmedial fascia dark grey ; discocellular spot black. Ground-colour of under surface of hind wing similar to fore wing, but slightly greyish except at outer margin ; lightly speckled with dark grey at anterior margin, and paler grey over rest of wing ; discocellular spot black.

♂ GENITALIA (Text-figs. 81-83) : valve with single, ventrally directed, medial spine ; gnathus with pair of short blunt, medial teeth ; gnathus not produced anteriorly into diaphragma ; apex of aedeagus spinose on one side, vesica with two patches of spines ; eighth tergite with two rounded posterior processes.

♀. Not known.

MEASUREMENTS. A.P.R. : ♂. 15. Wing : ♂. 23 mm. (1).

DISCUSSION. It seems probable from the evidence provided by the male genitalia that *clenchi* is most closely related to *dissipinosa*. Externally *clenchi* is probably indistinguishable from *dissipinosa*, *confusa*, *ramosa* and *unispinosa* but the male genitalia (in particular the valve, gnathus, uncus, aedeagus) readily separate these five species.

The male genitalia of *clenchi* are, I believe, sufficiently diagnostic to permit rapid identification and to justify description of this species from a single specimen.

DISTRIBUTION (Map 3). Known only from the type locality in CAMEROUN.

MATERIAL EXAMINED. Type. Holotype ♂, CAMEROUN, Efulen, 30.viii.1921 (*Weber*) ; Drepanidae genitalia slide No. 1535 ; in the Carnegie Museum, Pittsburgh.

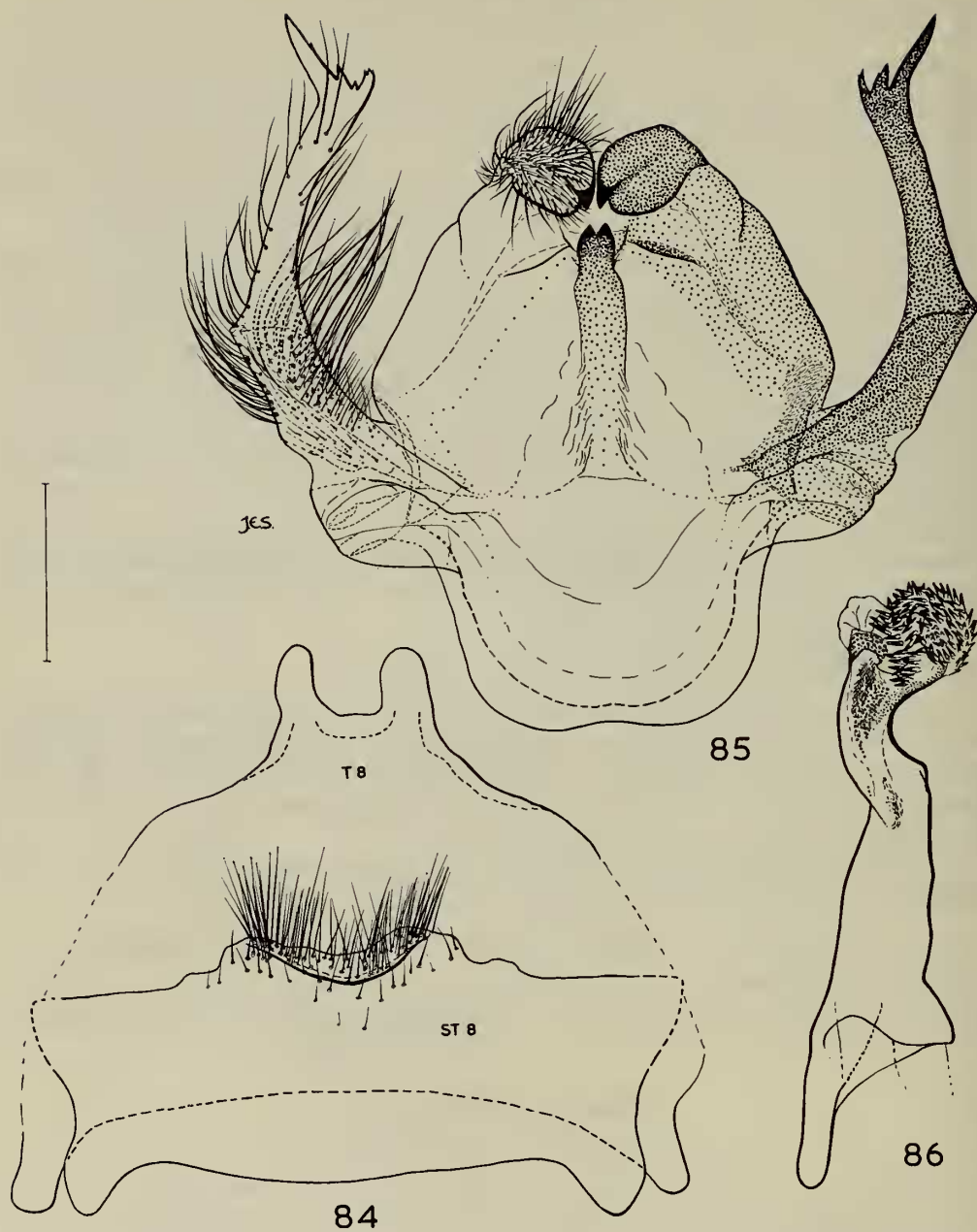
*Negera ramosa* sp. n.

(Text-figs. 84-86 ; Map 3)

DESCRIPTION. ♂. Palp very dark brown. Front of head brown, vertex buff ; narrow band lateral and ventral to eyes very dark brown. Upper surface of antennal shaft very pale buff.

Thorax and fore legs as for *confusa*. Mid and hind legs very pale buff but each tarsal segment greyish brown distally.

Shape and colour-pattern of wings as for *confusa*. Base of upper surface of fore wings buff ; area between medial fasciae pinkish buff, with paler central area ; area between postmedial fascia and outer margin buff anteriorly, reddish brown posteriorly at outer margin, with darker



FIGS. 84-86, *Negera ramosa*, ♂ genitalia. 84, eighth abdominal tergite and sternite ; 85, ♂ ; 86, aedeagus.

brown area mid-way between tornus and posterior end of postmedial fascia. The large spot posterior to the cell between  $Cu_{1b}$  and  $1A$  on the upper surface of the fore wing is a pale reddish brown in the holotype but black in the paratype. Upper surface of hind wing pinkish buff except for broad, dark, yellowish brown band from outer angle to  $M_4$ . Under surface pale brownish orange; markings as described for *confusa*.

♂ GENITALIA (Text-figs. 84–86): valve multispinose apically; posterior processes of gnathus short; gnathus produced anteriorly into diaphragma. Aedeagus twisted apically; vesica with three groups of spines, those of basal group stout and conspicuous. Posterior processes of eighth tergum elongate (Text-fig. 84). Eighth sternum as in Text-fig. 84.

♀. Not known (but see Distribution).

MEASUREMENTS. A.P.R.: ♂. 14. Wing: ♂. 24.5, 23.5–26.0 mm. (2.)

DISCUSSION. Externally similar to *confusa*, *clenchi*, *disspinosa* and *unispinosa*. The genitalia are most like those of *confusa* but differ in the shape of the valves, uncus, gnathus, eighth tergum and sternum, and in the shape and ornamentation of the aedeagus.

DISTRIBUTION (Map 3). N. E. CONGO and UGANDA. A single female from Kawanda (Uganda) in the Coryndon Museum, Nairobi, may prove to be conspecific with the holotype when further material becomes available. A second female from Kafakumba (Congo) in the Musée Royal de l'Afrique centrale, Tervuren, possibly also belongs to this species.

MATERIAL EXAMINED. Type. Holotype ♂, CONGO, Uele, Paulis, 29.ix.1956 (*Fontaine*); Drepanidae genitalia slide No. 1079; in the Musée Royal de l'Afrique centrale, Tervuren.

Paratype. *Coryndon Museum, Nairobi*. UGANDA: 1 ♂, Ankole, Kalinzu Forest, xi.1961 (*Carcasson*).

### *Negera unispinosa* sp. n.

(Text-fig. 87–90; Pl. 6, fig. 293; Map 3)

DESCRIPTION. ♂. Head as for *confusa*, but ventral half of vertex pinkish buff. Palps and antennae similar to *confusa*.

Thorax and fore leg as for *confusa*. Mid and hind legs uniformly pale pinkish buff.

Shape and colour-pattern of wings as for *confusa*. Costa of upper surface of fore wing pale pinkish brown; apical costal marking brown, edged distally with white, remaining two costal markings pink; area between medial fascia pale yellowish brown enclosing large paler area at end of cell; area distal to postmedial fascia pale yellowish brown, darkest at tornus, speckled with black at anal margin between postmedial fascia and tornus. Upper surface of hind wing very pale buff proximal to antemedial fascia, pinkish buff between antemedial and medial fasciae; pale yellowish brown distal to medial fascia but darker yellow-brown between outer angle and  $M_3$ . Under surface of fore wing pale pinkish buff; discocellular spot black; oblique postmedial fascia as in *confusa*; faintly marked, grey interneural spots between  $M_2$  and anal margin; outer margin yellow-orange between  $M_3$  and  $Cu_{1a}$ , reddish brown from  $Cu_{1a}$  to near anal margin. Under surface of hind wing paler than fore wing, very lightly maculate distally with darker tone; costa speckled with black; black discocellular spot present.

♂ GENITALIA (Text-figs. 87–89): valve broad, tapered, acuminate, toothed on one side, inner surface concave; gnathus with short medial teeth; uncus bilaterally symmetrical; vesica of aedeagus spinose.

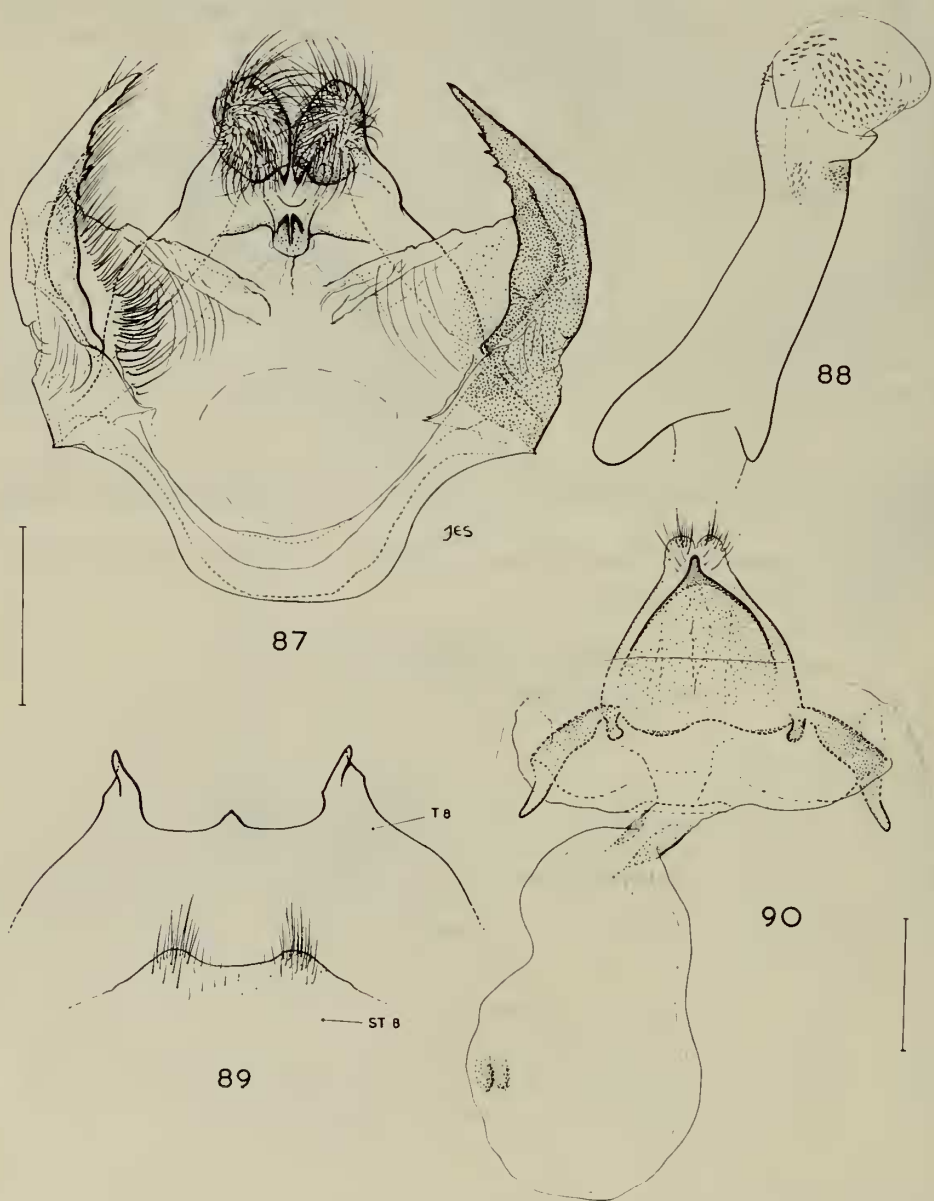
♀ (Plate 6, fig. 293). Similar to male but fore wing with more strongly convex margin and with falcate apex.



♀ GENITALIA (Text-fig. 90) : dorsal surface of ninth tergum heavily sclerotized, with single small digitate posterior process medially.

MEASUREMENTS. A.P.R. : ♂. 21 ; ♀. 8. Wing : ♂. 21.5 mm. (1) ; ♀. 24.5 mm. (1).

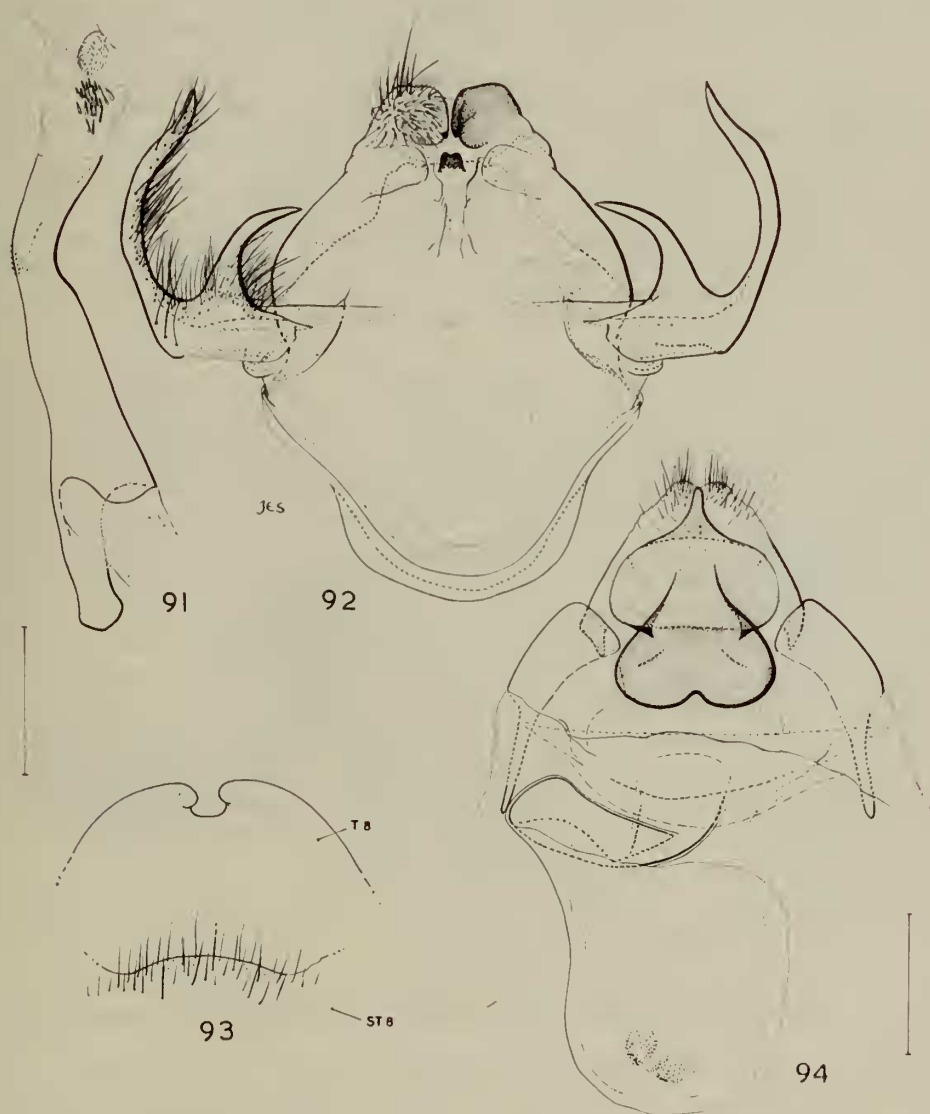
DISCUSSION. Distinguished by the genitalia from *ramosa*, *clenchi*, *confusa* and *disspinosa*, each of which is nearly identical externally to *unispinosa*.



FIGS. 87-90, *Negera unispinosa*, genitalia. 87, ♂ ; 88, aedeagus ; 89, posterior margin of ♂ eighth abdominal tergite and sternite ; 90, ♀ (dorsal view).

MATERIAL EXAMINED. Type. Holotype ♂, NYASALAND, Mlanje, 16.v.1913 (*Neave*) ; Drepanidae genitalia slide No. 1070 ; in the British Museum (Natural History).

Paratype. *British Museum (Natural History)*. NYASALAND : 1 ♀, Mlanje, 14.v.1913 (*Neave*).



FIGS. 91-94, *Negeva quadricornis*, genitalia. 91, aedeagus ; 92, ♂ ; 93, posterior margin of ♂ eighth abdominal tergite and sternite ; 94, ♀ (dorsal view).

*Negera quadricornis* sp. n.

(Text-figs. 74, 91-94 ; Pl. 5, figs. 287-289 ; Map 3)

DESCRIPTION. ♂. Head and appendages as for *confusa*. Thorax and fore leg as for *confusa*. Mid and hind legs mainly very pale buff ; pinkish at distal end of tibia ; each tarsal segment slightly darker distally on outer surface. Outer margin of fore wing moderately convex (Text-fig. 74), more strongly convex in most specimens than in *confusa*. Pattern and coloration of upper surface of fore wing of holotype as for holotype of *confusa* except for more conspicuous white subterminal dashes on both wings. Under surface of holotype pale, pinkish brown, with discocellular spot absent from fore wing ; coloration and markings of remaining paratypes as for *confusa*.

♂ GENITALIA (Text-figs. 91-93) : valve strongly bifurcate ; gnathus produced for short distance into diaphragma medially, teeth short and blunt ; aedeagus with spinose patch apically, vesica with three patches of spines ; posterior margin of eighth tergum emarginate medially, eighth sternum as in Text-fig. 93.

♀ (Plate 5, fig. 287). Similar to male, but outer margin of fore wing more strongly convex and apex strongly produced and falcate.

♀ GENITALIA (Text-fig. 94) : dorsal part of ninth segment curiously shaped, with cordate anterior evagination and digitate posterior process ; eighth segment also well developed ; posterior part of ductus bursae sclerotized.

MEASUREMENTS. A.P.R. : ♂. 16 ; ♀. (no complete antenna). Wing : ♂. 22.5, 20.5-24.0 mm. (9) ; ♀. 23.0 (1).

DISCUSSION. This species is externally similar to *ramosa*, *confusa*, *unispinosa*, *clenchi*, and *disspinosa*, but most male specimens can be distinguished by the more strongly convex outer margin of the fore wing. In the male genitalia the shape of the valves and posterior margin of the eighth tergum together with the shape and ornamentation of the aedeagus provide distinctive and reliable diagnostic characters.

As in most species of *Negera* this species exhibits striking variation in the coloration of the upper surface of the wings. The ground-colour may be pale reddish, yellowish or greyish brown, usually lightly speckled with black or dark brown, but more heavily speckled with black in three paratypes (2 ♂, type locality, and 1 ♂, Congo, Kivu ; see Plate 5, fig. 289) in which much of the area between the medial fascia of the fore wing is replaced by black. One male from Cameroun has a large black spot as the fore wing posterior to the cell between  $Cu_{1b}$  and 1A : in the holotype and remaining paratypes this spot is very faintly marked (Plate 5, fig. 288).

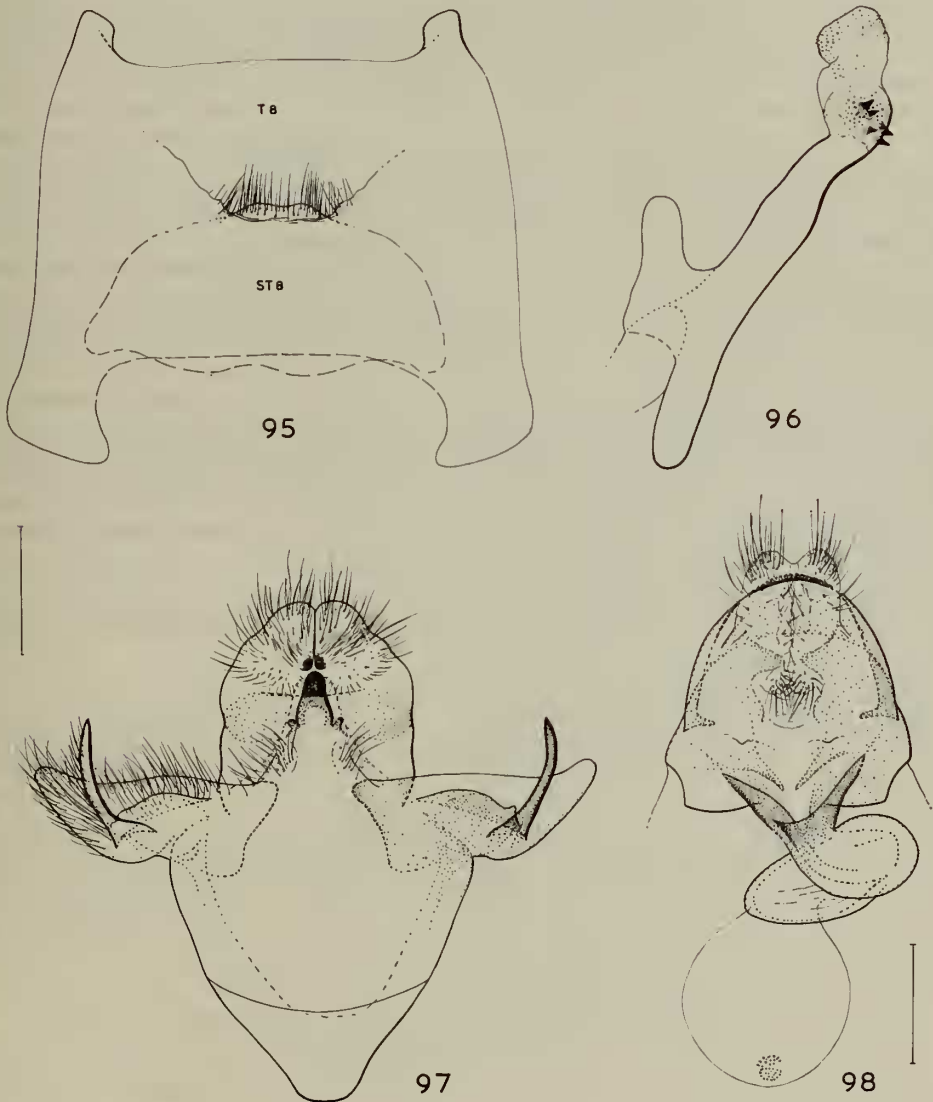
The single female, listed below, which I have identified as *quadricornis*, was collected at the same locality and on the same day as the male holotype. There is little doubt that these two specimens are conspecific.

DISTRIBUTION (Map 3). Known from UGANDA, CONGO, ANGOLA and CAMEROUN, in areas of either rain-forest or montane forest.

MATERIAL EXAMINED. Type. Holotype ♂, UGANDA, Mt. Elgon, x.1931, No. 166 (*Jackson*) : Drepanidae genitalia slide No. 1072 ; in the British Museum (Natural History).

Paratypes. *British Museum (Natural History)*. UGANDA : 2 ♂, 1 ♀, same data as type ; 1 ♂, Mt. Elgon, ix.1931 (*Jackson*). CONGO : 1 ♂, W. Kivu, Katana, 5,000-7,000 ft., iv.1924 (*Barns*). ANGOLA : 1 ♂, Pungo Andongo (*Homeyer*). CAMEROUN : 1 ♂, Bitje, Ja River, x-xi.1913. *Musée Royal de l'Afrique centrale, Tervuren*.

CONGO : 1 ♂, Kivu, Nyamunyuye (Malungu), iv.1957 (*Hecq*) ; 1 ♂, Lusambo, Route Batempa km. 45, 17.x.1950 (*Fontaine*).



FIGS. 95-98, *Negea bimaculata*, genitalia. 95, ♂ eighth abdominal tergite and sternite ; 96, aedeagus ; 97, ♂ ; 98, ♀.



*Negera bimaculata* (Holland) **comb. n.**

(Text-figs. 95-98 ; Pl. 6, figs. 291, 292 ; Map 3)

*Ancistrota bimaculata* Holland, 1893 : 177.*Ancistrina bimaculata* (Holland) ; Gaede *in* Seitz, 1927 b : 289. [Poor fig.]*Ancistrina bimaculata* (Holland) ; Gaede 1931 : 50.*Ancistrina immaculata* Gaede, *in* Seitz, 1927 b : 289. [Inaccurate fig.] **syn. n.***Ancistrina immaculata* Gaede ; Gaede, 1931 : 50.

DESCRIPTION. ♂. Terminal segment of palp buff ; outer surface of remainder of palp scarlet, inner surface buff. Front of head scarlet, orange, or brownish scarlet ; vertex buff or brownish buff. Upper surface of antennal shaft yellow, with some scarlet scales on scape and pedicel.

Dorsal surface of thorax buff, much paler at anterior margin with some scarlet scales ; ventral surface pale buff, but scarlet or brownish scarlet immediately ventral and lateral to eyes. Front surface of whole of fore legs and tibia and tarsus of remaining legs orange-scarlet, inner surface buff. Costa of fore wing strongly convex distally ; apex weakly falcate ; outer margin straight or slightly concave (Plate 6, fig. 291) ; upper surface buff or greyish buff ; with paler, lustrous, medial area in some specimens ; tornus darker, with numerous dark brown or black striations parallel to outer margin ; numerous brown striations at right-angles to postmedial fascia between this fascia and base of wing, most conspicuous in anterior half of wing ; discocellular spot black ; postmedial fascia dull brownish red laterally, with longitudinal central lustrous band ; costal spots faintly marked except at apex ; large, reddish brown spot posterior to cell between  $Cu_{1b}$  and  $1A$  in some specimens ; trace of pale, subterminal, neural spots. Ground-colour of upper surface of hind wing buff or greyish buff, darkest between medial fascia and weakly marked sub-basal fascia ; speckled with brown distal to medial fascia, most strongly at outer angle ; wing lustrous in broad band distal to medial fascia in some specimens ; discocellular spot black ; colour of medial fascia as for postmedial of fore wing ; trace of pale, subterminal, neural dashes in some specimens. Under surface of fore wing scarlet-orange along costa and posterior to cell, intermediate area orange, all lightly speckled with red or brown ; discocellular spot black ; weakly marked postmedial fascia scarlet-orange or greyish scarlet. Under surface of hind wing scarlet-orange along costa, anal margin and at anal angle, lightly speckled with scarlet or reddish brown ; discocellular spot black ; fasciae absent.

Colour of dorsal surface of abdomen doubtful, but probably as for upper surface of ground-colour of wings ; reddish brown along medial line of one specimen from Gabon. Ventral surface buff, with scarlet posterior margin to each segment.

♂ GENITALIA (Text-figs. 95-97) : valve with short central process and long, acuminate, anterior process ; medial part of gnathus undivided ; uncus weakly bifurcate ; aedeagus with curious, flat process at base on side opposite caecum penis ; apex of aedeagus with group of stout spines ; vesica scobinate ; posterior processes of eighth tergum widely separated ; eighth sternum as in figure.

♀ (Plate 6, fig. 292). Similar to male but with following differences : apex of fore wing strongly falcate ; outer margin and postmedial fascia of fore wing strongly convex ; colour of upper surface darker—reddish or greyish brown ; subterminal markings more clearly marked ; (tornus and most of medial area on fore wing and whole of area distal to medial fascia conspicuously lustrous in one example from Liberia) ; ground-colour of under surface of fore wing scarlet-orange except for yellow costal streak near apex and narrow, marginal, yellow area between  $M_2$  and  $Cu_{1a}$  ; ground-colour of under surface of hind wing scarlet orange, but yellow in cell and along outer margin between  $Rs$  and  $Cu_{1a}$ , and pale grey between  $Cu_{1a}$  and anal angle.

♀ GENITALIA (Text-fig. 98) : bursa copulatrix with simple signum ; ductus bursae sclerotized and sharply bent posteriorly ; ninth segment hood-like dorsally.

MEASUREMENTS. A.P.R. : ♂. 17 ; ♀. 10. Wing : ♂. 25.0, 23.0-26.5 mm. (8) ; ♀. 27.0, 24.5-29.5 mm. (5).

DISCUSSION. The males of this species can be separated from the rest of the genus by the straight outer margin of the fore wing and the proximity to it of the post-

medial fascia of the upper surface of the wing, and from all species except *natalensis* by the presence of dark striations at right-angles to the postmedial fascia on the fore wing. The shape of the valve, tegumen, saccus, uncus and gnathus, the presence of a flattened process at the base of the aedeagus, and the widely separated posterior processes of the eighth tergum characterize the male genitalia and distinguish *bimaculata* from each of the remaining species of *Negera*.

Apart from *bimaculata* the females of only *natalensis*, *unispinosa* and *quadricornis* are known. It is therefore difficult to assess the diagnostic value of the specific characters of the female of *bimaculata* though it seems probable that the strongly convex outer margin and postmedial fascia of the fore wing will prove to distinguish it from *ramosa*, *disspinosa*, *clenchi* and *confusa* as well as from the species mentioned above whose females are known.

The variation in the intensity of coloration of the large spot on the fore wing posterior to the cell between  $Cu_{1b}$  and 1A misled Gaede (1927) into describing *immaculata* (holotype with spot hardly visible), a junior synonym of *bimaculata* (holotype with conspicuous spot). There is also considerable variation in the ground-colour of the wings (see description).

The genus *Ancistrotia* Hübner, in which *bimaculata* was first placed, is a genus of Syssphingidae.

**DISTRIBUTION** (Map 3). Known from the rain-forest regions of LIBERIA, IVORY COAST, GHANA, CAMEROUN and GABON. There is a female from Paulis (north-east CONGO), in the collection of the Musée Royal de l'Afrique centrale, Tervuren, which belongs to this species but may prove to represent a new subspecies when male specimens become available for comparison. A single male from Boukoko (CENTRAL AFRICAN REPUBLIC) in the Institut d'Enseignement et de Recherches tropicales, Bondy, which almost certainly represents a new subspecies of *bimaculata* may be consubspecific with the female from Paulis.

**MATERIAL EXAMINED.** Types. Holotype ♂ of *bimaculata* Holland, "Ogowe" [Ogowe River, CAMEROUN], "C. M. Ent. type series 200"; in the Carnegie Museum, Pittsburgh; (examined for me by Dr. Clench). Holotype ♂ of *immaculata* Gaede, Ogowe [CAMEROUN]; in the Zoologisches Museum, Berlin.

Other material. *British Museum (Natural History)*. LIBERIA: 1 ♀, Kitoma (7° 19' N, 8° 47' W), 1,600 ft., 29.viii.1953 (*Peters*). GHANA: 1 ♂, W. Provinces, Aiyinasie, vi.1925 (*Hyatt*). CAMEROUN: 2 ♂, 4 ♀, Bitje, Ja River, 2,000 ft., x, xi.1915 (*Bates* and others). GABON: 2 ♂, Tchibanga (*Rougeot*).

### *Negera natalensis* (Felder) **comb. n.**

(Text-figs. 99-108; Pl. 6, fig. 294; Map 3)

*Ctenogyna natalensis* Felder, 1874: 3, pl. 85, fig. 4.

*Ctenogyne* [sic] *natalensis* Felder; Gaede, 1931: 50.

**DESCRIPTION.** ♂, ♀. Dorsal surface of palpi brown or brownish scarlet, ventral surface yellow or buff. Front of head pale orange, vertex yellow or buff; posterior margin of head with dark reddish brown fringe laterally and ventrally. Antenna buff.

Dorsal surface of thorax pale buff or pale greyish buff, palest anteriorly. Ventral surface pale yellow.

Shape of wings as in Plate 6, fig. 294 ; hind wing produced at  $M_3$ . Ground-colour of upper surface of both wings buff (holotype), reddish buff, greyish buff or purplish buff with brown maculations and transverse striations. Upper surface of fore wing with antemedial fascia, edged distally by large brown maculations ; small dark discocellular spot ; large brown maculation distal to end of cell ; grey, lunulate postmedial fascia, edged distally with white posteriorly ; pale buff, lunulate subterminal fascia, weakly marked anteriorly, bordered distally and proximally by broad brown band at tornus. Antemedial fascia of hind wing weakly marked ; dark discocellular spot larger than on fore wing ; postmedial fascia slightly sinuous, strongly marked, dark brown edged distally with white ; subterminal fascia dentate, pale buff or white edged proximally with broad pale brown band. Under surface of fore wing yellow with pale purplish brown area at apex, at tornus and along distal margin of dark brown, straight postmedial fascia ; lightly transversely striate in most specimens (including holotype) ; cell-spot as for upper surface ; trace of whitish subterminal fascia at tornus. Under surface of hind wing pale pinkish buff (holotype) or pale reddish buff ; striations as for fore wing ; cell-spot larger than on fore wing ; postmedial fascia faintly marked, brown or grey (holotype) ; trace of orange or pale reddish brown subterminal fascia.

♂ GENITALIA : valve with one, two or three strongly sclerotized pre-apical processes ; lateral arms of gnathus massive ; vesica of aedeagus without cornuti ; posterior margin of both eighth tergite and sternite concave or emarginate medially.

♀ GENITALIA : post-ostial segment strongly modified and sclerotized dorsally.

MEASUREMENTS. A.P.R. : ♂. 23 ; ♀. 17.

DISCUSSION. The angulate hind wing and the distinctive colour-pattern at once separate *natalensis* from the rest of the genus. The male genitalia are equally diagnostic.

The name *carnea* Saalmüller, listed by Gaede (1931 : 50) as a junior synonym of *natalensis*, has been recalled from synonymy and the species transferred to *Epicampoptera* Bryk. Also recalled from synonymy is *geometroides* Holland which is now applied to a newly recognized subspecies of *natalensis*. *C. lytaea* Druce placed by Gaede (1927 b : 288) in the synonymy of *natalensis* is in fact synonymous with *Negera confusa* Walker.

There is some individual variation in the wing coloration but this is less evident than in most species of *Negera*.

DISTRIBUTION (Map 3). This species has a particularly wide distribution. The nominate subspecies is known chiefly from the coastal forest-savanna of NATAL and CAPE PROVINCE. The subspecies *geometroides* ranges across the CONGO BASIN, and is known from the forest-savanna of UGANDA, the montane vegetation of Arusha, TANGANYIKA, and at least the northern part of NORTHERN RHODESIA. The third subspecies, *parviluma*, occurs in the rain-forests of WEST AFRICA but is also known from the mangroves of SENEGAL and from one Gambian specimen (without further locality data). A female from FERNANDO PO, in the collection of the British Museum (Natural History), probably also represents the species *natalensis*, but additional material is needed before this can be confirmed.

### *Negera natalensis natalensis* (Felder)

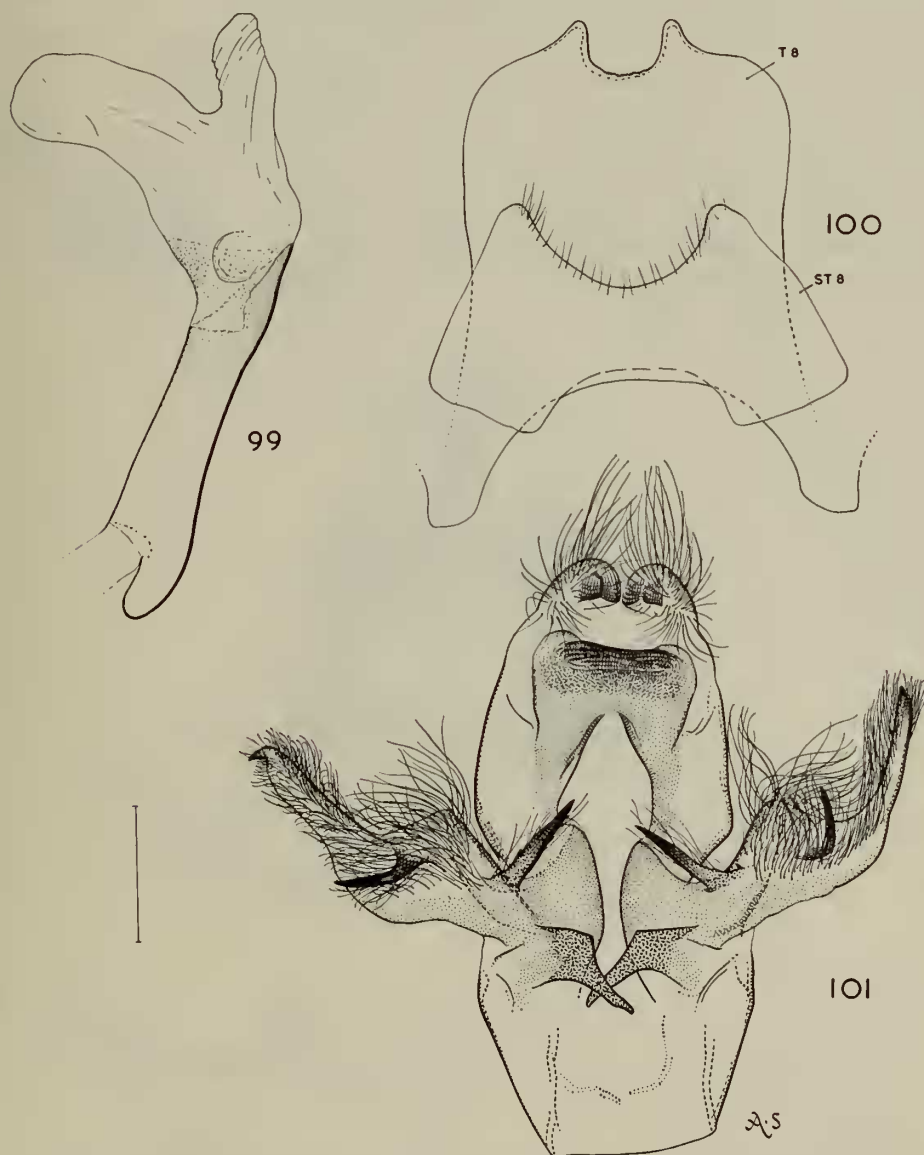
(Text-figs. 99-102 ; Map 3)

DIAGNOSIS. Separable from the other two subspecies apparently only by the genitalia (Text-figs. 99-102). In the male the three sclerotized valve processes are distinctive. The post-

eriorly slender, bifurcate, eighth tergite in the female distinguishes it from *geometroides* and *parviluma*.

MEASUREMENTS. Wing : ♂. 21.0, 18.5–24.5 mm. (19) ; ♀. 23.5, 20.0–27.5 mm. (27).

DISTRIBUTION (Map 3). Known with certainty from the coastal forest-savanna of NATAL and CAPE PROVINCE. A single male from SOUTHERN RHODESIA (Vumba Mountains), in the Collection of the National Museum of Southern Rhodesia, may



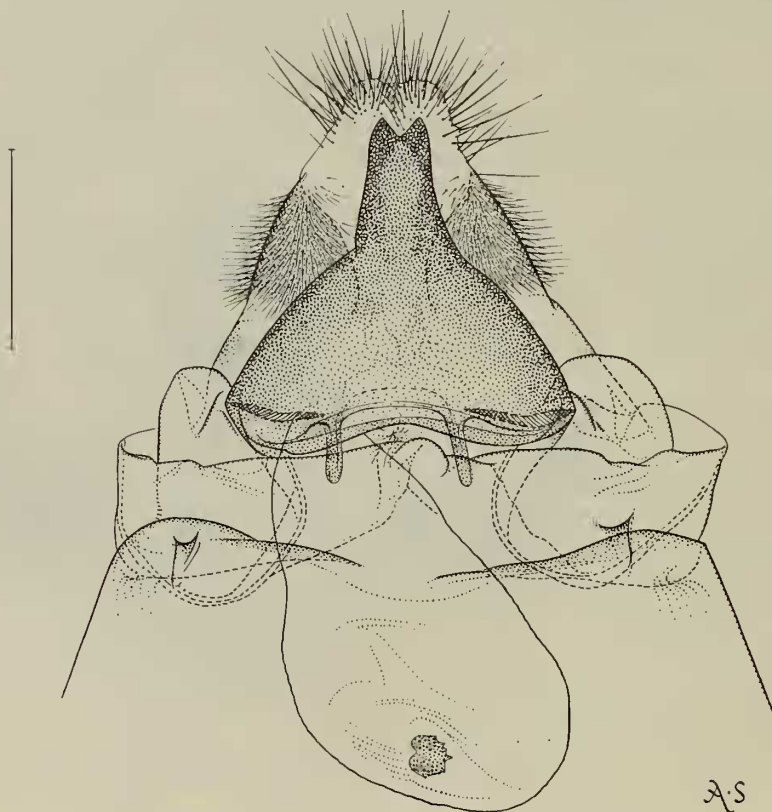
FIGS. 99–101, *Negea natalensis natalensis*, ♂ genitalia. 99, aedeagus ; 100, eighth abdominal tergite and sternite ; 101, ♂.



prove to belong to this subspecies when further material is available for comparison. A female labelled "Mkubwa" (stated by Dr. L. Vari, in correspondence, to be "Bwana M'kubwa," a small town near N'dola, NORTHERN RHODESIA) belongs with little doubt to the nominate subspecies. More material from this area should show whether this is an accidental occurrence or whether the boundary between this subspecies and *geometroides* lies somewhere between Bwana M'Kubwa and Solwezi (some 150–200 miles north-west of the former).

**MATERIAL EXAMINED.** Type. Holotype ♀, NATAL, Durban, ii.1867; Drepanidae genitalia slide No. 1011; in the British Museum (Natural History).

Other material. *British Museum (Natural History)*. NATAL: 1 ♂, Durban, ii.1905 (Cooke); 6 ♂, 6 ♀, Durban, 1903; 16 ♂, 16 ♀, Durban, xi.1900, viii.1901, 21.x.1908, 9.iv, vii.1909, viii–6.x.1922 (Leigh); 1 ♀, Durban, iv.1908 (Fontaine); 1 ♀, Krantzkloof, 21.i.1918 (Hargreaves); 3 ♂, Pinetown. CAPE PROVINCE: 1 ♂, Grahamstown. *Transvaal Museum, Pretoria*. NATAL: 4 ♂, 3 ♀, Durban, 1906 (Leigh), 1.i.1910 (Cooke), iv.1919; 1 ♀, Nyalazi R., ix.1910 (Bell-Marley); 1 ♂,

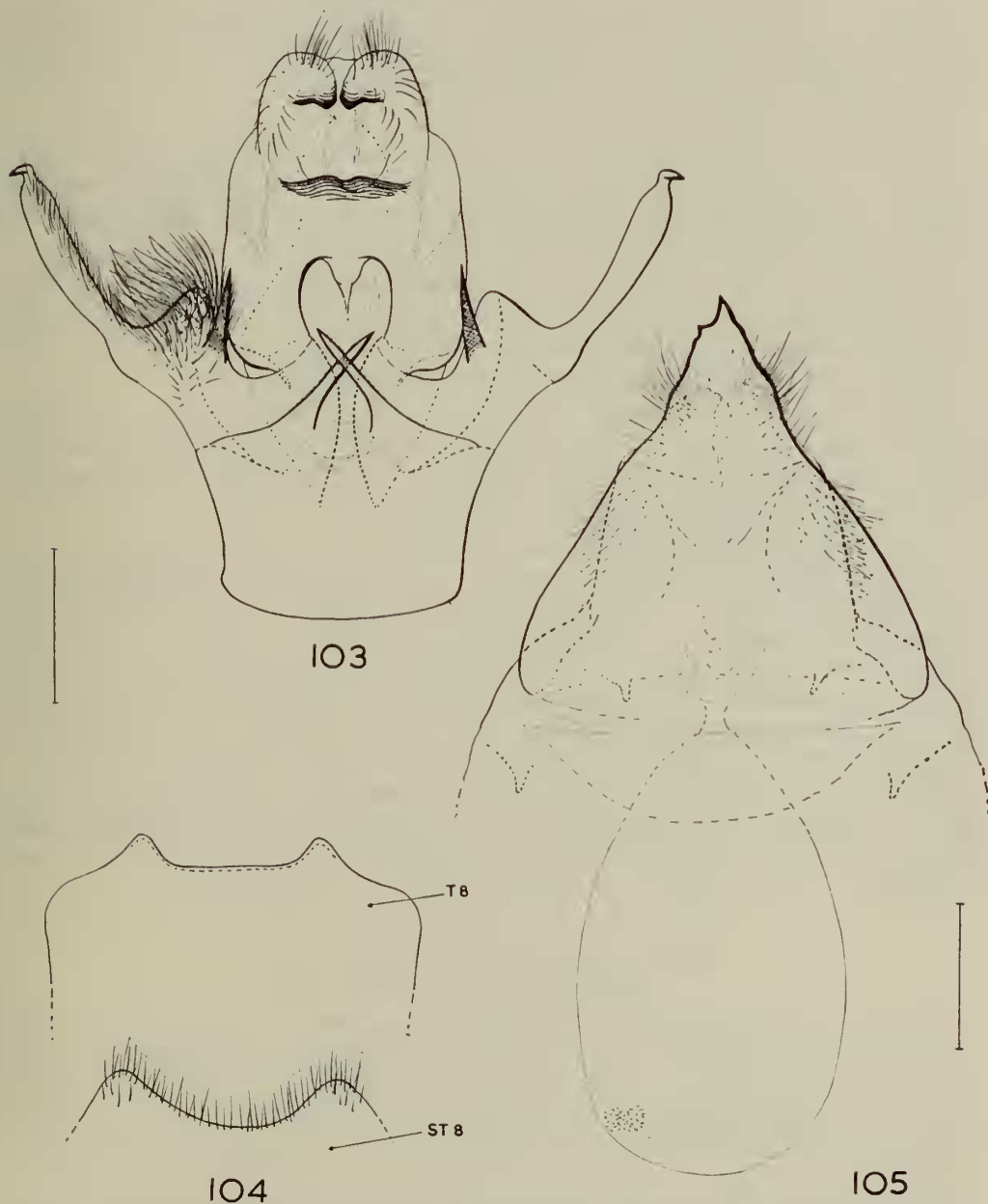


102

FIG. 102, *Negera natalensis natalensis*, ♀ genitalia (dorsal view).



Umlaas R., i.v.1928 (*Marley*) ; 1 ♂, Kloof, xi.1929 (*Marley*). *Durban Museum, South Africa*. NATAL : 3 ♂, Durban, i.1904 (*Marley*), 4.x.1916 (*Platt*), 23.iv.1935 (*Winfield*) ; 1 ♂, Stanger, ii.1958 (*Schulz*).



FIGS. 103-105, *Negera natalensis geometroides*, genitalia. 103, ♂ ; 104, posterior margin of ♂ eighth abdominal tergite and sternite ; 105, ♀ (dorsal view).

***Negera natalensis geometroides* (Holland) ssp. rev., comb. n.**

(Text-figs. 103-105 ; Map 3)

*Ancistrota geometroides* Holland, 1893 : 177.

DIAGNOSIS. Distinguished from *parviluma* and the nominate subspecies by the genitalia (Text-figs. 103-105). The two heavily sclerotized processes of each valve characterize the male, and the irregularly shaped apex of the eighth tergite (subject to individual variation in dentation) serves to distinguish the female.

MEASUREMENTS. Wing : ♂. 23.5, 21.5-27.0 mm. (11) ; ♀. 26.5, 27.0-29.0 mm. (11).

DISCUSSION. Gaede (1927 b : 289) was the first to synonymize *geometroides* and *natalensis*. However, a comparison of the genitalia of specimens from the type locality of *geometroides* (the holotype lacks an abdomen) and the holotype of *natalensis* has shown that they are subspecifically distinct.

DISTRIBUTION (Map 3). Known from the rain-forest areas of CAMEROUN, CONGO, and CENTRAL AFRICAN REPUBLIC, but also from the forest-savanna of UGANDA and the myombo woodlands of NORTHERN RHODESIA (Solwezi). The subspecies is also represented in TANGANYIKA, at Arusha at the foot of Mt. Meru.

Type. Holotype (sex not known), CAMEROUN, Ogové [Ogowe River] ; Carnegie Museum type series 199 ; Carnegie Museum Neg. No. 206 M-9 ; in the Carnegie Museum, Pittsburgh. (Type without abdomen.) The holotype has not been seen, but a photograph of the holotype has been seen.

MATERIAL EXAMINED. *British Museum (Natural History)*. N. RHODESIA : 4 ♂, 4 ♀, Solwezi, vii.1917 (*Dollman*). UGANDA : 1 ♀, Port Alice [=Entebbe], 3.ii.1897 (*Ansorge*). TANGANYIKA : 2 ♀, Arusha district (*Moore*). CONGO : 1 ♀, Kassai, Kapulumbo (*Landoek*) ; 2 ♂, Elisabethville, 24.v.1950, 23-31.vii.1957 (*Seydel*). CENTRAL AFRICAN REPUBLIC : 1 ♂, Bangui (*le Moult*). CAMEROUN : 3 ♂, 3 ♀, Ja River, Bitje, 2,000 ft., vi, Dry Season, ix-xi, Wet Season (*Bates*). *Muséum d'Histoire naturelle, Geneva*. CONGO : 1 ♂, Mt. Katanga, Panda, éclosion 24.v.1930 (*Romieux*). *Coryndon Museum, Nairobi*. UGANDA : 1 ♂, Kawanda, 10.x.1941 (*Taylor*) ; 1 ♂, Entebbe, vi.1957 (*Carcasson*). *Institut d'Enseignement et de Recherches tropicales, Bondy*. CENTRAL AFRICAN REPUBLIC : 1 ♂, Boukoko M'Baiki, 10.ii.1950 (*Réal*). *Muséum national d'Histoire naturelle, Entomologie agricole tropicale, Paris*. CAMEROUN : 1 ♂, N'kolbisson (Yaoundi), at light, 30.ix.1962 (*Pujol*).

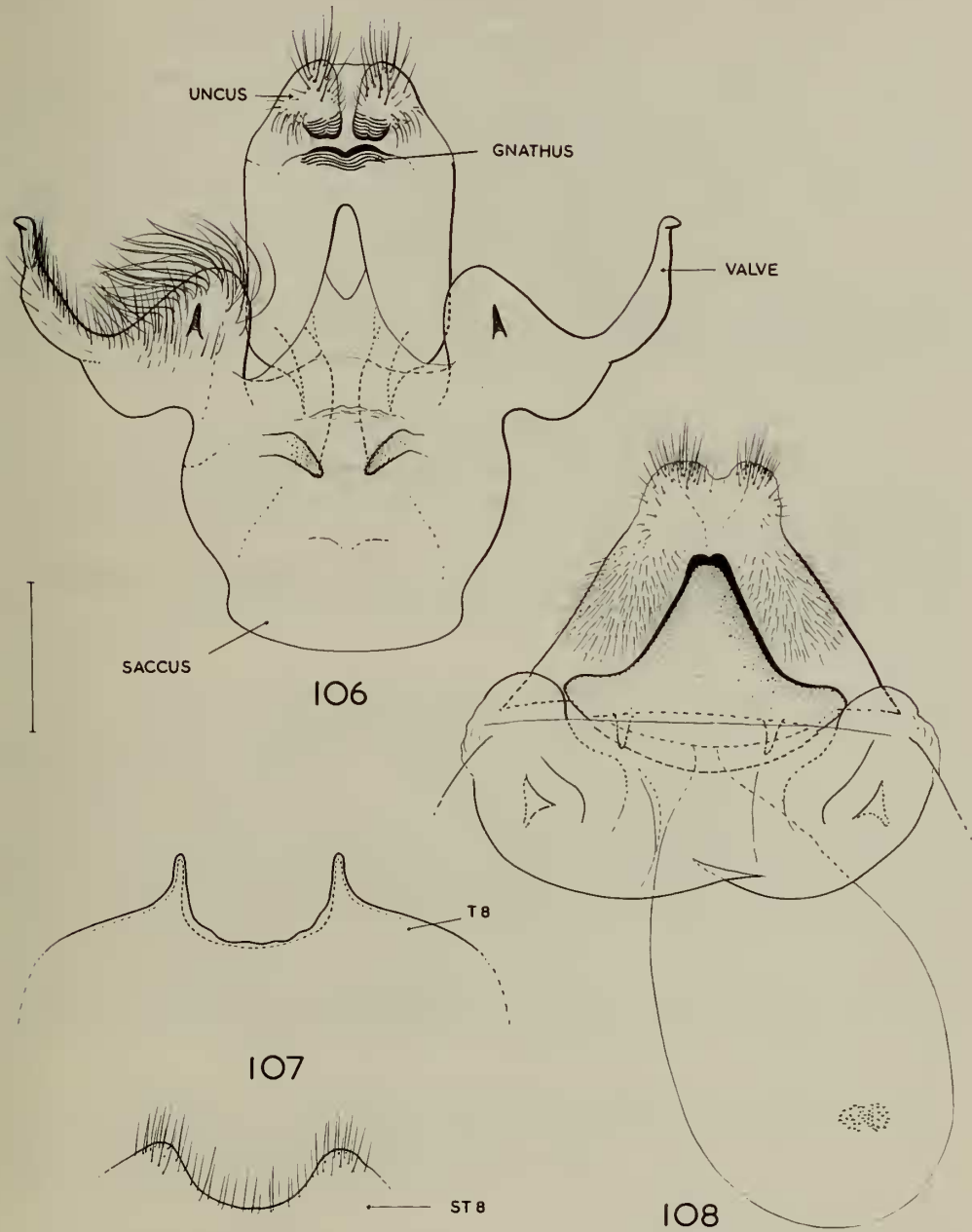
***Negera natalensis parviluma* ssp. n.**

(Text-figs. 106-108 ; Map 3)

DIAGNOSIS. There are apparently no significant external differences between *parviluma* and the previous two subspecies. In the male genitalia (Text-figs. 106, 107) there is a weakly sclerotized process at the base of the valve, and a short, heavily sclerotized spine at the middle of the ventral surface of each valve. The posterior processes of the eighth tergite are longer than in either of the remaining subspecies. The eighth tergite of the female abdomen (Text-fig. 108) is bifurcate, as in the nominate subspecies, but differs in being more evenly tapered posteriorly.

MEASUREMENTS. Wing : ♂. 24.5, 24.0-25.0 mm. (5) ; ♀. 27.5, 26.0-29.5 mm. (6).

DISTRIBUTION (Map 3). Known from the rain-forest areas of IVORY COAST, GHANA and NIGERIA, and from the mangroves of SENEGAL. The specimen recorded



FIGS. 106–108, *Negera natalensis parviluma* genitalia. 106, ♂; 107, posterior margin of ♂ eighth abdominal tergite and sternite; 108, ♀ (dorsal view).

below from GAMBIA bears no further details concerning locality. A female from FERNANDO PO, in the collection of the British Museum (Natural History), probably represents this subspecies, but more material is needed to confirm this.

MATERIAL EXAMINED. Type. Holotype ♂, S. NIGERIA, Oshogbo (*Hiscock*) ; Drepanidae genitalia slide No. 1096 ; in the British Museum (Natural History).

Paratypes. *British Museum (Natural History)*. NIGERIA : 2 ♀, Lagos ; 1 ♂ [no further data] ; 1 ♂, 1 ♀, Old Calabar ; 1 ♀, Oruga. GHANA : 1 ♂ near Anamabu, 30.iii.1940, reared from larva on *Pavetta* sp. (*Box*). IVORY COAST : 1 ♀, [no further data] ; 1 ♀, Bingerville, 1915 (*Mélou*). SENEGAL : 1 ♂, Casamance (*Lagraize*). GAMBIA : 1 ♀, (*Moloney*). *Muséum national d'Histoire naturelle, Entomologie agricole tropicale, Paris*. IVORY COAST : 1 ♂, 2 ♀, Bingerville, on *Trichalysia* and *Pavetta* (Rubiaceae), 6-27.x.1956 (*Daguatiguy*). *Institut d'Enseignement et de Recherches tropicales, Bondy*. IVORY COAST : 1 ♀, Adiopodoumé, 13.xi.1953 (*Réal*).

### GONORETA Warren, 1902

(Text-figs. 109-148 ; Pls. 7, 8, figs. 295-304 ; Map 4)

*Gonoreta* Warren, 1902 : 488. Type-species, by monotypy, *Gonoreta ansorgei* Warren, 1902.

*Gonoreta* Warren ; Gaede, in Seitz, 1927 b : 290.

*Gonoreta* Warren ; Gaede, 1931 : 41.

*Lomadontophana* Bryk, 1913 : 8. Type-species, by original designation, *Lomadontophana subtilis* Bryk, 1913. **syn. n.**

*Lomadontophana* Bryk ; Gaede, in Seitz, 1927 b : 290.

*Lomadontophana* Bryk ; Gaede, 1931 : 51.

DESCRIPTION. ♂, ♀. Proboscis vestigial ; palp minute, not extending as far as labrum ; labrum smooth, not globose ; antenna unilamellate from base to tip.

Meso- and metathoracic legs with one pair of very short apical spurs. Outer margin of fore wing produced at  $Cu_{1a}$  or immediately anterior to this vein. Outer margin of hind wing entire ; anal margin straight or slightly convex proximally. Venation of fore wing as in Text-fig. 109.  $Sc + R_1$  in the hind wing approximated to  $Rs$  for short distance distal to end of cell. Upper surface of both wings greyish, reddish or yellowish brown ; both wings usually speckled or striate with darker brown. Fore wings usually with dark medial shade ; double subterminal fascia, dentate and sometimes edged with greyish white distally, most strongly marked posteriorly ; discocellular spot and less distinct posterior cell-spot brown or greyish white. Hind wing sometimes with dark medial shade ; cell-spots as on fore wing, but invariably greyish white. Under surface of both wings red, orange or yellow, speckled or striate with a darker colour, usually paler at apical part of costa on fore wing and proximally on hind wing ; only marking is a blackish postmedial fascia on fore wing, with trace of same fascia on anterior part of hind wing. (See Plates 7 and 8.)

Colour of abdomen as for corresponding adjacent surface of hind wing.

♂ GENITALIA (see labelled text-fig. 110). Diaphragma with ovoid, sclerotized, medial plate. Gnathus well developed. Uncus bifurcate ; lateral lobe present. Valve pouch-like, sclerotized proximally, membranous distally. Aedeagus without cornutus ; with lateral process in some species. Eighth sternum strongly sclerotized ; one or more acuminate posterior processes on either side ; usually asymmetric.

♀ GENITALIA as in text-figures. Signum absent in *opacifinis* sp. n. and *bispina* sp. n.

TAXONOMIC HISTORY. The genus *Gonoreta* was erected in 1902 by Warren for a new species *ansorgei*, (Warren, 1902). Bryk (1913) subsequently described a new genus *Lomadontophana*, without reference to *Gonoreta*. Bryk included two new



species in his genus, *subtilis* and *differenciata*, and selected the former as the type-species. Comparison of the holotypes and topotypical material of the type-species of *Gonoreta* and *Lomadontophana* has shown that they are congeneric and that *Lomadontophana* is a junior synonym of *Gonoreta*. Warren (1923 : 447) added *subrosea* to *Gonoreta*. Gaede, in Seitz, (1927 b : 290) listed under *Lomadontophana* the two originally included species and added *Oreta contracta* Warren and *Oreta gonioptera* Hampson, and under *Gonoreta* listed only *ansorgei* Warren. In his catalogue Gaede (1931 : 41 and 51) followed his previous revision in Seitz (1927 b : 290) but included *subrosea* Warren under *Gonoreta*.

There has been some confusion concerning the location in the literature of the original description of *G. subrosea* Warren. Gaede (1931 : 41) cites as the reference "Novit. zool 9 : 488 (1902)" which is the same wrong reference as that given by Warren (1923 : 490). It is in fact in this latter work (Warren 1923 : 477) that I believe the first reference and description occur, even though Warren heads the description "*subrosea* Warr." instead of *subrosea* sp. n. The reason for this confusion appears to be that Warren believed that he had already described *subrosea* in 1902 (Novit. zool. 9 : 488), whereas he had in fact described here as new the superficially similar *G. ansorgei*. There seems to be little doubt that the original description of *subrosea* is Warren's description in Seitz (1927 b : 477). Examination of the type of *subrosea* has shown that this species must be removed from *Gonoreta*. It is close to *Oreta fulgens* Warren, another Borneo species, and can be placed in the same genus until a revision of *Oreta* Walker is undertaken: *Oreta subrosea* (Warren) **comb. nov.**

In the following pages one species name is relegated to synonymy and six new species are added to the genus *Gonoreta*. A new subspecies is also described. Ten species are now included in this genus.

DISCUSSION. This genus is probably most closely related to the endemic Madagascan genus *Gonoretodes*, from which it can be separated by the lamellate (not pectinate) antennae, the genitalia, and by the fact that  $Sc + R_1$  approximates to  $R_s$  for a short distance distal to end of the cell and does not anastomose with  $R_s$  as in *Gonoretodes*. The shape of the wings distinguishes *Gonoreta* and *Gonoretodes* from the remaining Ethiopian genera of Drepanidae.

The colour-pattern of the wings, antennal pectination ratio and the lack of a signum in the female genitalia separate *opacifinis* and *bispina* from the rest of the genus, though it can not be divided into species-groups until females of *albiapex*, *cymba*, *angulosa* and *gonioptera* have been examined.

In those species where a large enough series was available, considerable, individual variation in the coloration of the wings was evident.

Only *subtilis* is known to be polytypic.

DISTRIBUTION. Three species of *Gonoreta* have extensive ranges. For example, *subtilis* is known from the IVORY COAST and SIERRA LEONE as subspecies *reali*, and as the nominate subspecies from much of the CONGO BASIN, the rain-forests of the Usumbara Mountains in eastern TANGANYIKA and the Malaba Forest of KENYA. The most extensive distribution is that of *opacifinis* which not only extends across

much of humid central Africa, from SIERRA LEONE to UGANDA, but also occurs in the thick woodland of the Vumba Mountains of SOUTHERN RHODESIA. The species *cymba* is also widespread, occurring in forested regions of NIGERIA and UGANDA and probably in much of the intervening territory. One species, *bispina*, is endemic to MADAGASCAR. Apart from *subtilis* and *opacifinis*, the species of *Gonoreta* are at present poorly represented in national collections.

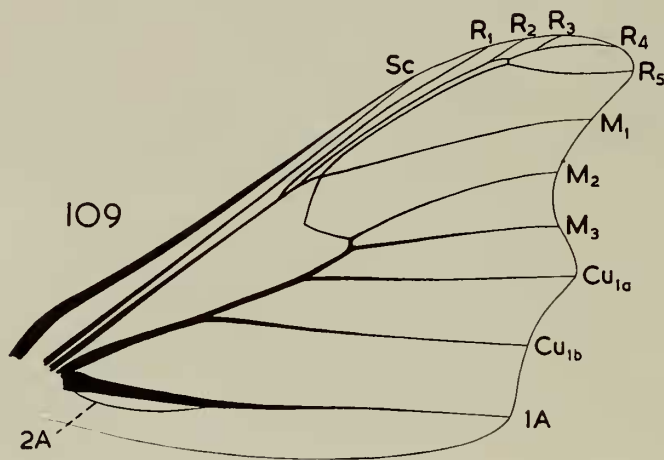


FIG. 109, *Gonoreta opacifinis*, ♂ fore wing venation.

#### KEY TO SPECIES

##### MALES

- 1 Outer margin of hind wing sharply angled at vein  $Cu_{1a}$  (Plate 8, fig. 299) ; aedeagus with hooked, thorn-like process at apex (Text-fig. 139) . . . . . **angulosa** (p. 86)
- Hind wing not sharply angled at vein  $Cu_{1a}$  ; aedeagus not as in Text-fig. 139 . . . . . 2
- 2 Eighth sternum strongly asymmetric ; valve with short, flattened seta posterodistally (Text-figs. 110, 111, 114, 115) . . . . . **subtilis** (p. 73)
- Eighth sternum only slightly asymmetric ; valve without flattened seta . . . . . 3
- 3 Aedeagus strongly arcuate apically (Text-figs. 122, 137) . . . . . 4
- Aedeagus not strongly arcuate apically (e.g. Text-figs. 121, 130) . . . . . 5
- 4 Posterior processes of eighth sternum multispinous (Text-fig. 121) . . . . . **gonioptera** (p. 77)
- Each process of eighth sternum forcipulate (Text-fig. 136) . . . . . **forcipulata** (p. 85)
- 5 Posterior processes of eighth sternum antler-like, multispinous ; aedeagus with short, apical spine (Text-figs. 142, 143) . . . . . **opacifinis** (p. 87)
- Eighth sternal processes not multispinous ; aedeagus without apical spine . . . . . 6
- 6 Posterior processes of eighth sternum long, arcuate, each twice as long as distance between bases of the two processes . . . . . 7
- Length of eighth sternal processes equal to, or less than, distance between bases of processes . . . . . 8
- 7 Genitalia as in Text-figs. 128, 129 . . . . . **contracta** (p. 79)
- Genitalia as in Text-figs. 118–120 . . . . . **albiapex** (p. 75)
- 8 Eighth sternum possessing two pairs of posterior processes (Text-fig. 125) . . . . . **differenciata** (p. 79)

- Eighth sternum with one pair of posterior processes . . . . . 9
- 9 Processes of eighth sternum strongly arcuate ; aedeagus with lateral bulge, without apical spine (Text-figs. 132, 133) . . . . . *cymba* (p. 82)
- Processes of eighth sternum nearly straight ; aedeagus without lateral bulge but with short apical spine (Text-figs. 146, 147) . . . . . *bispina* (p. 89)

***Gonoreta subtilis* (Bryk) comb. n.**

(Text-figs. 110-117 ; Pl. 7, fig. 297 ; Map 4)

*Lomadontophana subtilis* Bryk, 1913 : 9.

*Lomadontophana subtilis* Bryk ; Gaede in Seitz, 1927 b : 290.

*Lomadontophana subtilis* Bryk ; Gaede 1931 : 51. [Inaccurate fig.]

DIAGNOSIS. ♂, ♀. Wing markings of upper surface obscure in male (Plate 7, fig. 297), slightly more emphasized in female. Ground-colour of upper surface pale buff or pale reddish buff ; markings more reddish. Ground colour of under surface of male dull greyish scarlet except for buff costa on fore wing and buff basal half of hind wing ; trace of postmedial fascia on fore wing. Under surface of female more yellowish than male.

♂ GENITALIA with distinctive aedeagus, asymmetric eighth abdominal sternum, and conspicuous lamellate seta on posterior margin of valve. Ductus bursae of female heavily sclerotized ; ventral lip of ostium emarginate ; two-pronged signum present, as in Text-fig. 144 of *opacifinis*.

MEASUREMENTS. A.P.R. : ♂. 9 ; ♀. 7. (Wing measurements given under subspecies.)

DISCUSSION. The shape of the aedeagus and eighth abdominal sternum together with similarities in colour-pattern suggest affinities with *albiapex*, but the distinctive genitalia and small differences in the colour-pattern and in the coloration render identification of both sexes an easy matter.

Little individual variation is apparent in the material examined. The more strongly marked colour-pattern of the upper surface of the females contrasts with the obscurely marked wings of the males.

Two subspecies are known : *reali* is known only from the IVORY COAST and SIERRA LEONE while the nominate subspecies ranges from ANGOLA across the CONGO to the Usambara Mountains of TANGANYIKA. No material was available from NIGERIA where it would be reasonable to expect the species to occur.

MATERIAL EXAMINED. Type. Holotype ♂, TANGANYIKA, West Usambara (*Weise*) ; in the Zoologisches Museum, Berlin.

Other material. (See under subspecies.)

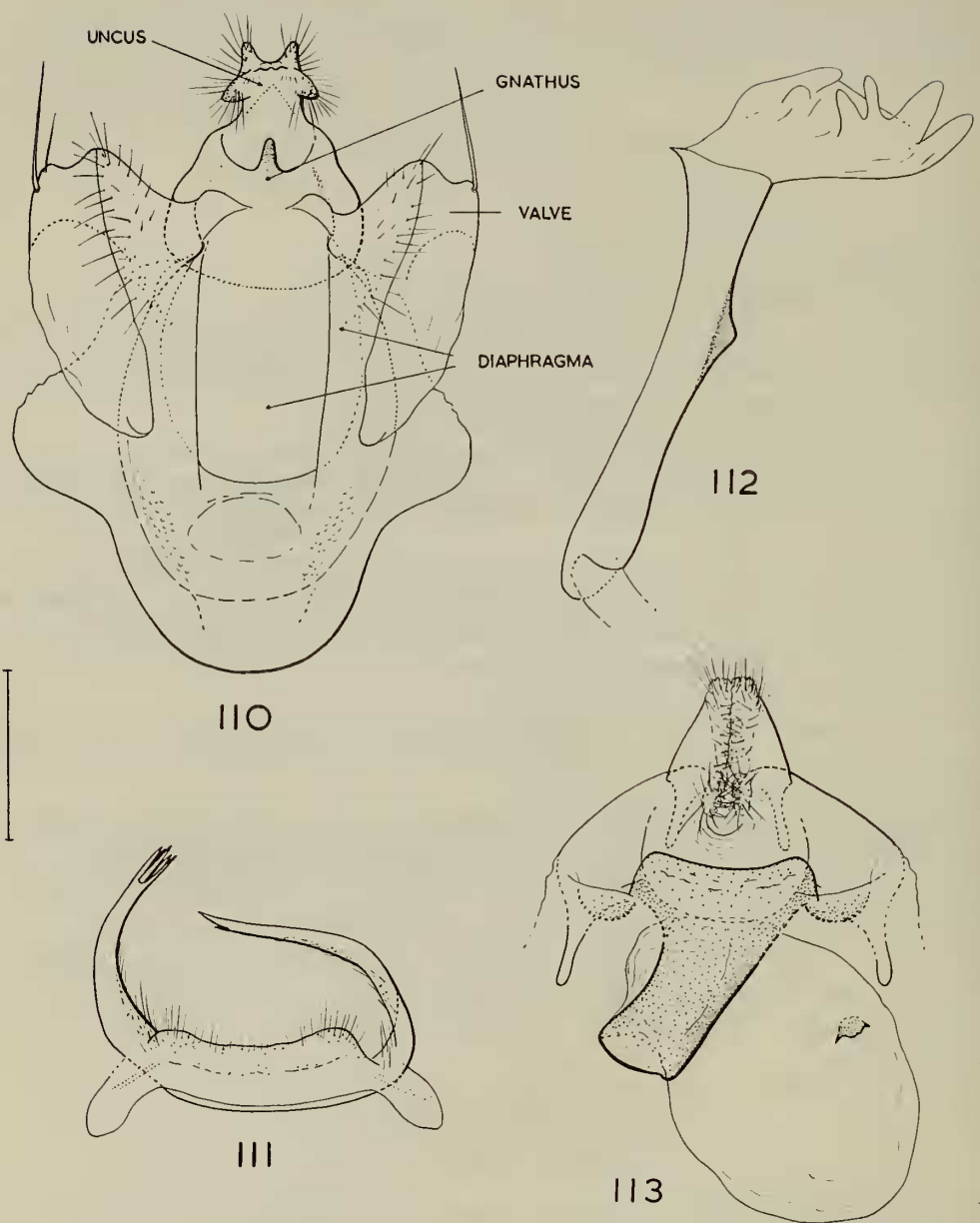
***Gonoreta subtilis subtilis* (Bryk)**

(Text-figs. 110-113 ; Map 4)

DIAGNOSIS. ♂, ♀. Separable from *reali* apparently only by the genitalia ; especially by the eighth sternum and the pointed processes of the valve of the male (Text-figs. 110-112) and by the less deeply emarginate ventral lip of the ostium in the female (Text-fig. 113).

MEASUREMENTS. Wing : ♂. 19.0, 16.5-20.5 mm. (19) ; ♀. 20.0, 18.5-22.0 mm. (6).

DISTRIBUTION (Map 4). Known from TANGANYIKA, KENYA, NYASALAND, CONGO, CAMEROUN and ANGOLA.



FIGS. 110-113, *Gonoreta subtilis subtilis*, genitalia. 110, ♂; 111, ♂ eighth abdominal sternite; 112, aedeagus; 113, ♀.



MATERIAL EXAMINED. *British Museum (Natural History)*. TANGANYIKA : 1 ♂, Usambara, Nguelo (*Rolle*) ; 3 ♂, Usambara, Amani, xii.1956 (*Verdcourt*) ; 1 ♂, Bukoba, 3.ix.1921 (*Miller*). NYASALAND : 1 ♀, Limbe, ix-x.1926 (*Barlow*). CONGO : 1 ♂, 1 ♀ Elisabethville, 24.iii.1955, 2.vi.1956 (*Seydel*). CAMEROUN : 1 ♂, xi (*Schwab*) ; 1 ♂, 1 ♀, Lolodorf, 1894-95 (*Condradt*) ; 1 ♀ (*Rutherford*). ANGOLA : 1 ♂, Amboim district, Fazenda Congulu, 7-800 m., 7-11.iv.1934 (*Jordan*). *Coryndon Museum, Nairobi*. TANGANYIKA : 4 ♂, Usambara Mts., Amani, ii.1953 (*Pinhey*). CONGO : 1 ♂, Loilo R., Ikela, iv.1959 (*Carcasson*). *National Museum S. Rhodesia*. TANGANYIKA : Usambaras, Amani, iv.1955. KENYA : 1 ♂ Malaba forest, vi.1957 (*Howard*). *Musée Royal de l'Afrique centrale, Tervuren*. CONGO : 1 ♀, Eala, viii.1936 (*Ghesquière*) ; 3 ♂, Kivu, Nyamunyune (Mulungu), 2.xii.1955, 11,14.i.1956 (*Hecq*) ; 4 ♂, Uele, Paulis, 1.iv.1957, 15,19.vi.1958, 1.vii.1959 (*Fontaine*) ; 1 ♀, Kasai, Luluaburg, 5.vi.1953 (*Fontaine*).

### *Gonoreta subtilis reali* ssp. n.

(Text-figs. 114-117 ; Map 4)

DIAGNOSIS. ♂, ♀. Characterized by the male genitalia (Text-figs. 114-116) and female genitalia (Text-fig. 117). No external diagnostic characters have been found in the material examined.

MEASUREMENTS. Wing : ♂. 20.0, 19.5-20.5 mm. (2).

DISTRIBUTION (Map 4). Known only from the IVORY COAST and SIERRA LEONE, but may also occur in moist regions West of GHANA.

MATERIAL EXAMINED. Type. Holotype ♂, IVORY COAST, near Nimba, 25.iii.1955 (*Réal*) ; Drepanidae genitalia slide No. 1117 ; in the Institut d'Enseignement et de Recherches tropicales, Bondy.

Paratypes. *Institut d'Enseignement et de Recherches tropicales, Bondy*. IVORY COAST : 1 ♀, Adiopodoumé 19.viii.1954 (*Réal*). *British Museum (Natural History)*. IVORY COAST : 1 ♂, Adiopodoumé (*Réal*). SIERRA LEONE : 1 ♂, Freetown, Mt. Aureol, ii.1956 (*Phipps*).

### *Gonoreta albiapex* sp. n.

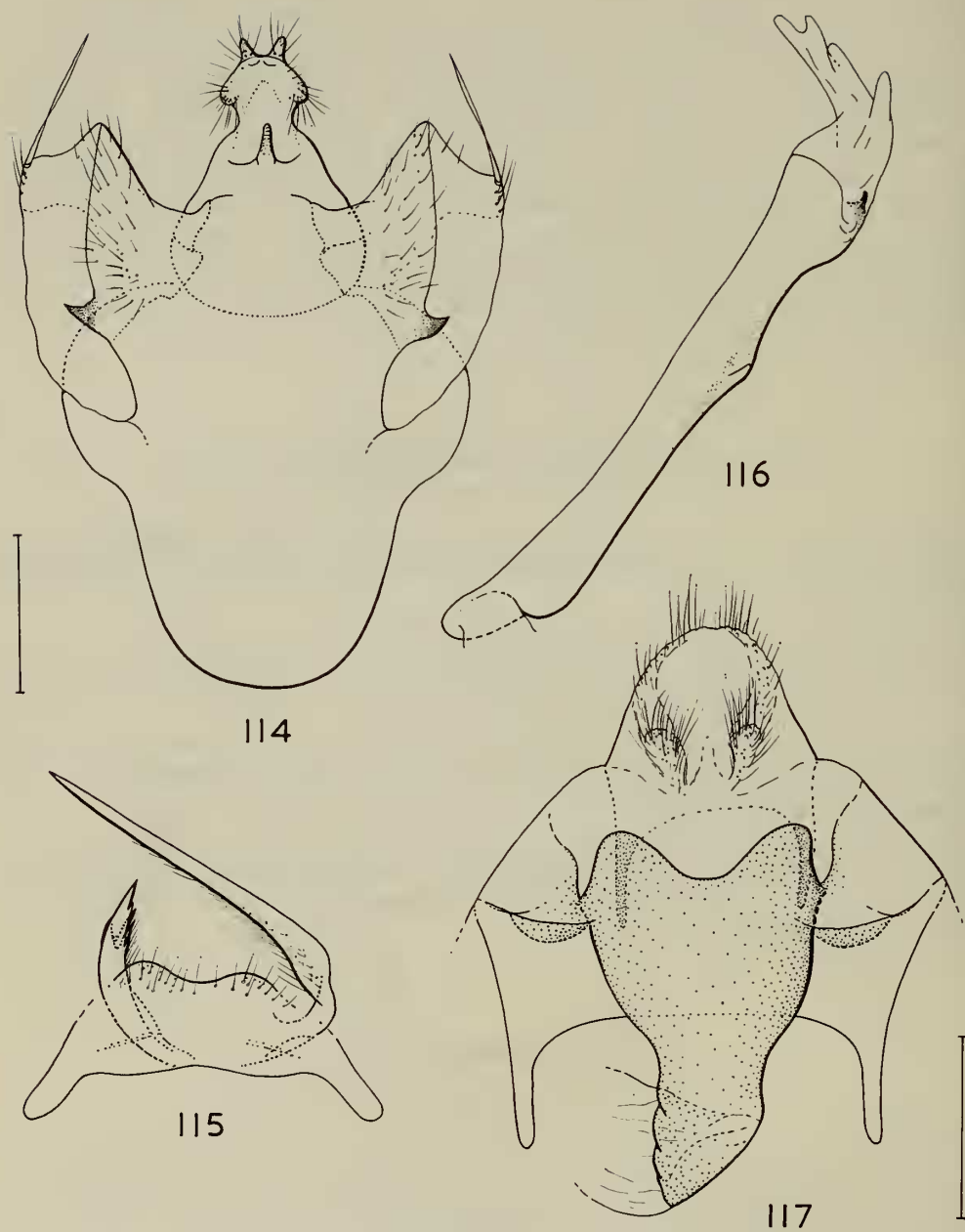
(Text-figs. 118-120 ; Pl. 8, fig. 302 ; Map 4)

DESCRIPTION. ♂. Palp greyish brown. Head greyish brown except for dark brown patch anterior to base of each antenna. Antennal shaft and dorsoposterior margin of head dull buff.

Thorax pale brownish grey dorsally, the scales white-tipped with dark band just before tip. Ventral surface of thorax dull buff except for dark brown band at sides of, and below, eyes. Front surface of fore legs proximal to tarsus and distal margin of each tarsal segment dark brown ; colour of rest of legs doubtful but probably dull buff.

Wing shape and colour-pattern as in Plate 8, fig. 302. Wing coloration similar to *gonioptera* except for well marked, white, distal edge to apical part of subterminal fascia. Ground-colour of





FIGS. 114-117, *Gonoreta subtilis reali*, genitalia. 114, ♂; 115, ♂ eighth abdominal sternite; 116, aedeagus; 117, ♀.

upper surface of both wings, slightly yellowish brown with greyish brown markings. Under surface of both wings dull pinkish grey, speckled and striate with darker grey ; oblique, dark grey, postmedial fascia on fore wing and trace at anterior margin of hind wing, bent away from apex just before costa on fore wing.

Coloration of abdomen doubtful.

♂ GENITALIA as in Text-figs. 118-120.

♀. Not known.

MEASUREMENTS. A.P.R. : ♂. 9. Wing : ♂. 18.7, 18.5-19.0 mm. (2).

DISCUSSION. The phylogenetic position of this species is doubtful, although the shape of the aedeagus and eighth abdominal sternum suggest affinities with *subtilis* Bryk. The colour-pattern readily distinguishes it from *subtilis*, and from *gonioptera* which is similar to *albiapex* in coloration.

DISTRIBUTION (Map 4). Only two specimens are known : one from the CONGO and one from UGANDA. A male from the Usambara Mountains, TANGANYIKA (in the collection of the National Museum of Southern Rhodesia), which differs in minor respects in the male genitalia, will probably prove to represent a new subspecies of *albiapex* when further material becomes available for comparison.

MATERIAL EXAMINED. Type. Holotype ♂, UGANDA, Ankole, Kalinzu Forest, xi.1961 (*Carcasson*) ; Drepanidae genitalia slide No. 1365 ; in the British Museum (Natural History).

Paratype. *Musée Royal de l'Afrique centrale, Tervuren*. CONGO : 1 ♂, Ituri, Nioka, i-xi.1953 (*Hecq*).

### *Gonoreta gonioptera* (Hampson) **comb. n.**

(Text-figs. 121-123 ; Pl. 7, fig. 298 ; Map 4)

*Oreta gonioptera* Hampson, 1914 : 103.

*Lomadontaphana gonioptera* (Hampson) ; Gaede *in* Seitz, 1927 b : 290.

*Lomadontophana gonioptera* (Hampson) ; Gaede, 1931 : 51.

DIAGNOSIS. ♂. Wing shape and colour pattern as in Plate 7, fig. 298. Ground-colour of upper surface of wings dull yellowish brown ; under surface dull greyish scarlet distally, reddish buff at base, fore wings more greyish distally than hind wings. Legs scarlet on front surface, buff on rear surface, fore legs most intensely coloured. Aedeagus arcuate apically ; eighth abdominal sternum with characteristic antler-like posterior processes (Text-figs. 121-123).

Similar in coloration to *albiapex* but with distinctive genitalia.

♀. Not known.

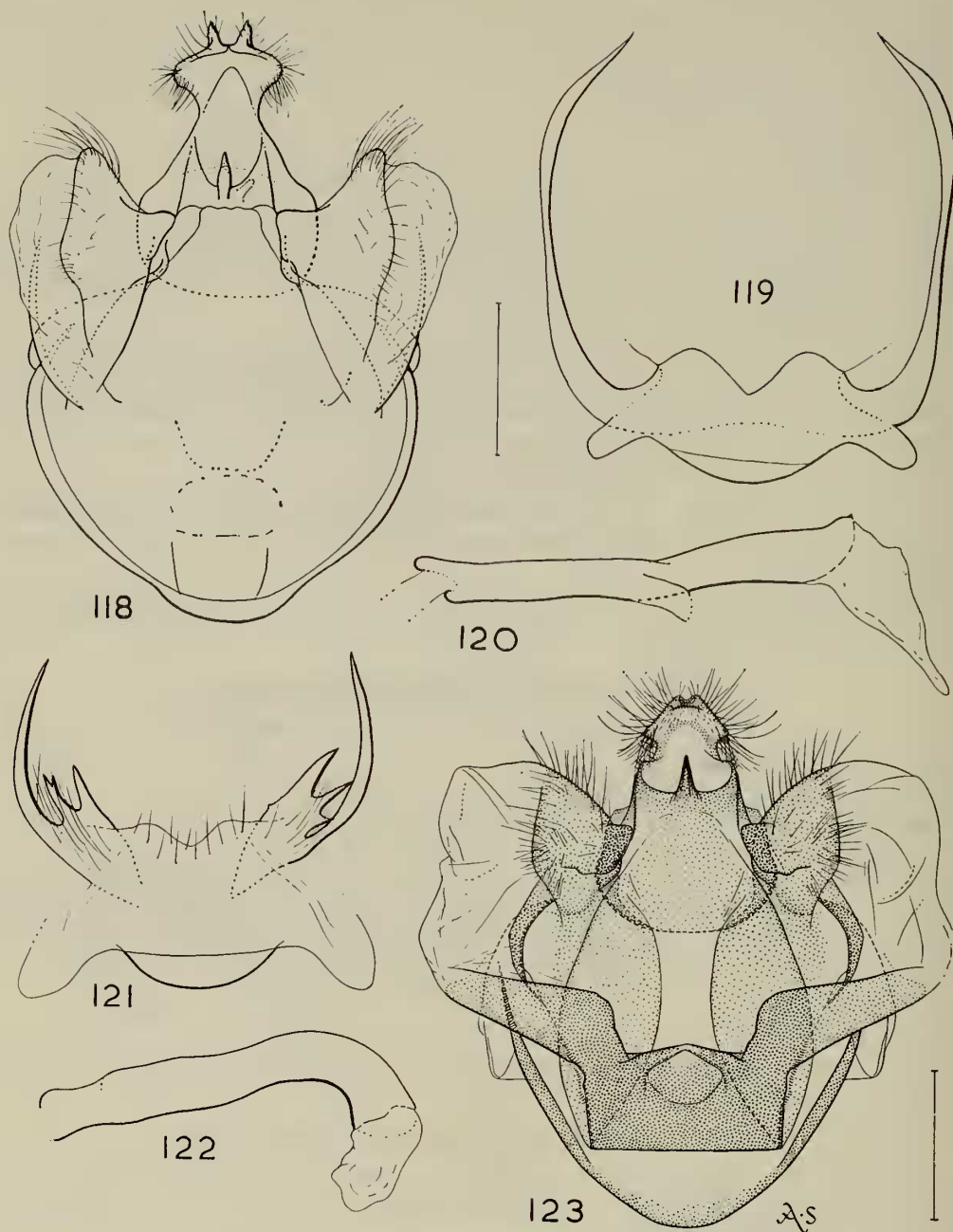
MEASUREMENTS. A.P.R. : ♂. 9. Wing : ♂. 19.5 mm. (2).

DISCUSSION. The affinities of this species are uncertain until female material can be examined.

DISTRIBUTION (Map 4). Known only from NIGERIA and CAMEROUN.

MATERIAL EXAMINED. Type. Holotype ♂ (not ♀ as stated by Hampson), S. NIGERIA, Ilesha (*Humfrey*) ; Drepanidae genitalia slide No. 621 ; in the British Museum (Natural History).

Other material. *British Museum (Natural History)*. CAMEROUN : 1 ♂, Johann-Albrechts Höhe (*Conradt*). *Naturhistoriska Riksmuseet, Stockholm*. CAMEROUN : 1 ♂.



FIGS. 118-123, *Gonoreta*, ♂ genitalia. 118-120, *albiapex*. 118, ♂ ; 119, eighth abdominal sternite ; 120, aedeagus. 121-123, *gonioptera*. 121, eighth abdominal sternite ; 122, aedeagus ; 123, ♂.

***Gonoreta diferenciata* (Bryk) comb. n.**

(Text-figs. 124-127 ; Pl. 8, fig. 301 ; Map 4)

*Lomadontophana diferenciata* Bryk, 1913 : 10.*Lomadontophana diferenciata* Bryk ; Gaede, in Seitz, 1927 b : 290. (Plate reasonably good, but see below.)*Lomadontophana diferenciata* Bryk ; Gaede, 1931 : 51.

DIAGNOSIS. ♂, ♀ (see Plate 8, fig. 301). The coloured illustration in Seitz is a good guide to the external appearance of this species but is inaccurate in coloration. The male can be distinguished from the female by the more strongly produced outer-marginal tooth in the fore wing.

The shape of the eighth abdominal sternum in the male (Text-fig. 125) distinguishes this species from all the other known species of the genus. The female genitalia (Text-fig. 124) separates *diferenciata* from those species whose females are known.

MEASUREMENTS. A.P.R. : ♂. 9 ; ♀. 8. Wing : ♂. 15.5, 15.0-16.0 mm. (2) ; ♀. 16.0 mm. (1).

DISCUSSION. Similar in coloration to *forcipulata* and *contracta* but readily distinguished from them by the male and female genitalia.

DISTRIBUTION. CAMEROUN and IVORY COAST.

MATERIAL EXAMINED. Type. Holotype ♀, " KAMERUN, Namiong b. Lolodorf B. Lokundjefluss " ; Drepanidae genitalia slide No. 1242 ; in the Zoologisches Museum, Berlin.

Other material. *Institut d'Enseignement et de Recherches tropicales, Bondy*. IVORY COAST : 1 ♂, Adiopodoumé (*Réal*) ; 1 ♂, near Nimba, 1.viii.1958 (*Réal*).

This species has previously been known only from the female holotype. The two males listed above, recently collected by Dr. P. Réal in the IVORY COAST, exactly match the holotype in coloration and colour-pattern and probably belong to this species, although further material from CAMEROUN must be studied before the identity of these males can be confirmed.

***Gonoreta contracta* (Warren) comb. n.**

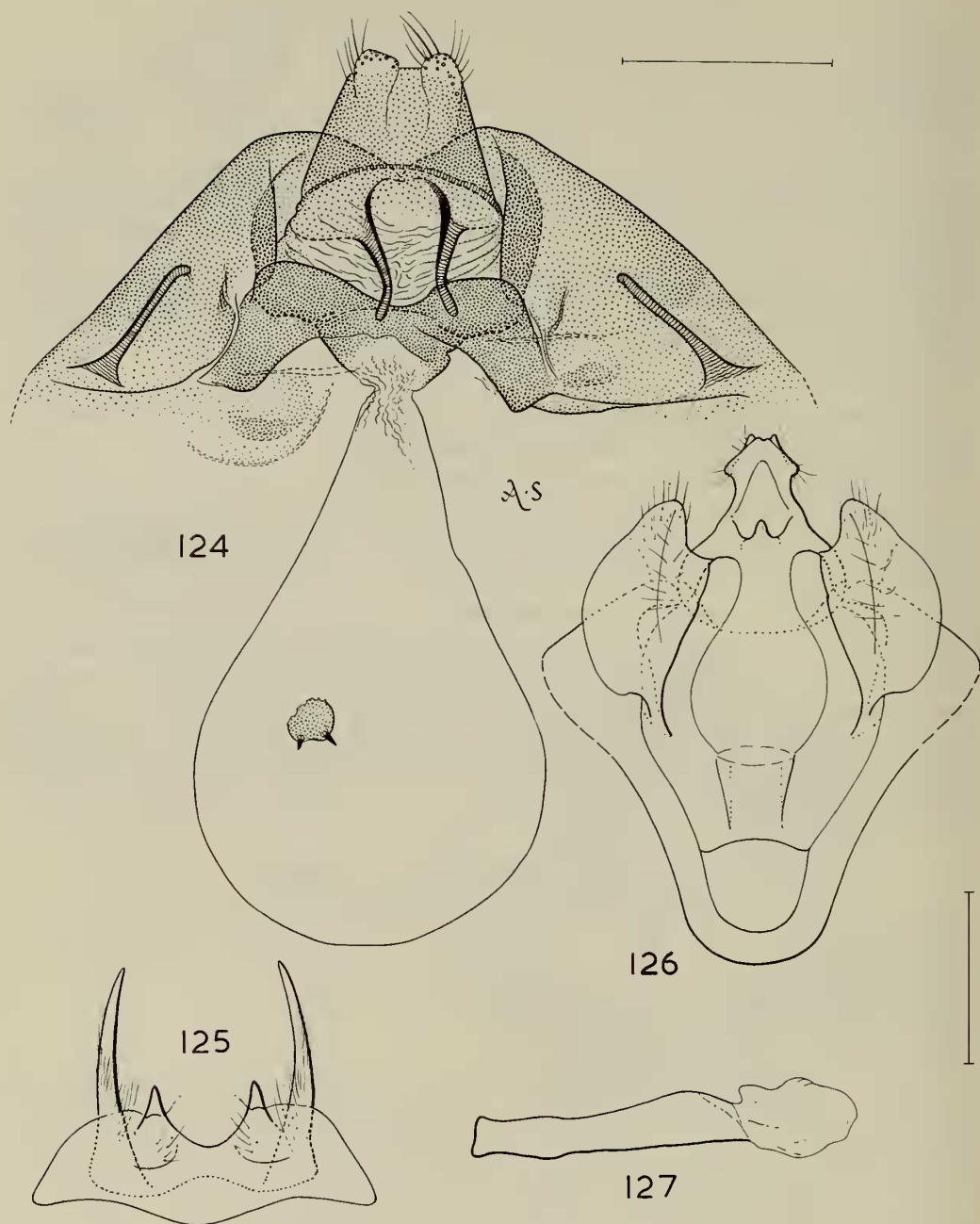
(Text-figs. 128-130 ; Pl. 8, fig. 303 ; Map 4)

*Oreta contracta* Warren, 1897 : 16.*Lomadontophana contracta* (Warren) ; Gaede, in Seitz, 1927 b : 290.*Lomadontophana contracta* (Warren) ; Gaede, 1931 : 51.*Gonoreta ansorgei* Warren, 1902 : 488. **syn. n.***Gonoreta ansorgei* Warren ; Gaede, 1931 : 41.

DIAGNOSIS. ♂. Plate 8, fig. 303 illustrates a male from Lagos, Nigeria. In some specimens (including the lectotype) the medial shade and posterior subterminal markings on the fore wing are relatively darker. The colour-pattern is very similar to that in *diferenciata* and *forcipulata*. The eighth abdominal sternum in the genitalia is distinctive (Text-fig. 129). The aedeagus is half the length of genitalia (measured from tip of uncus to saccus), slightly arcuate, unornamented.

♀. Similar to male, but the outer margin of the fore wing is less strongly produced at *Cu*<sub>1a</sub>. The shape of the ostial region of the genitalia (Text-fig. 130) distinguishes this species from *diferenciata* and *forcipulata*.

MEASUREMENTS. A.P.R. : ♂. 9 ; ♀. 8. Wing : ♂. 16.0, 16.0 mm. (2) ; ♀. 16.0, 15.5-16.5 mm. (4).

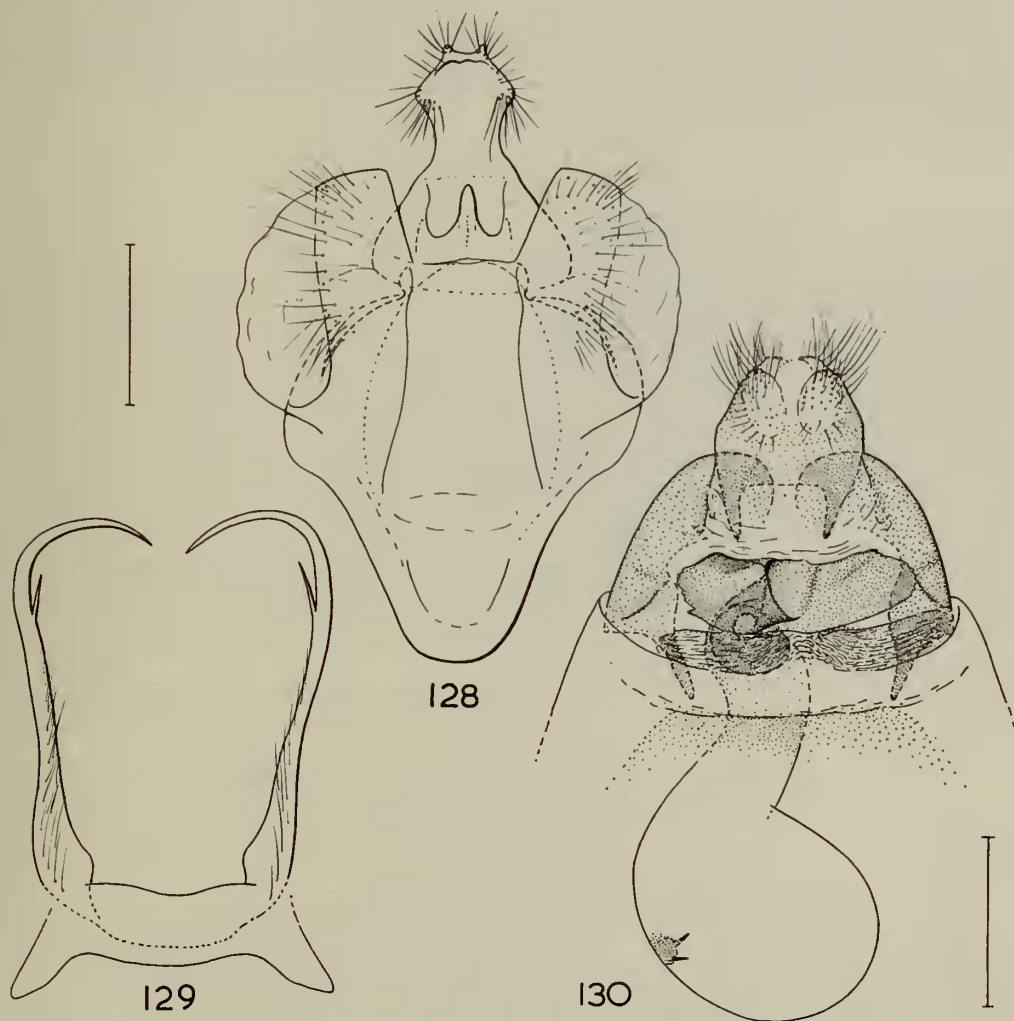


FIGS. 124-127, *Gonoreta diferenciata*, genitalia. 124, ♀; 125, ♂ eighth abdominal sternite; 126, ♂; 127, aedeagus.



DISCUSSION. The individual variation found in the short series available for study is noteworthy. One form of colour-pattern is shown in Plate 8, fig. 303 : this is similar to that in the lectotype. In the Nigerian male collected in Lagos by Boorman, the whole of the distal third of the fore wing is densely irrorate with black. In one male examined from CAMEROUN the short lateral branch on each posterior process of the eighth abdominal sternum is absent.

A single male from GABON collected by Rougeot (in the Muséum national d'Histoire naturelle, Entomologie agricole tropicale, Paris) belongs to this species but possesses small genitalic differences in the male, and when further material is available may prove to represent a new subspecies.



FIGS. 128-130, *Gonoreta contracta*, genitalia. 128, ♂ ; 129, ♂ eighth abdominal sternite ; 130 ♀.

DISTRIBUTION (Map 4). NIGERIA, CAMEROUN and GABON.

MATERIAL EXAMINED. Type. In his description Warren listed two syntypes. I have labelled the male, which bears the following data, as the LECTOTYPE : " Warri, NIGER C.P., Febr. 96 Dr. Roth Oreta contracta Type ♂ Warr. ; Drepanidae genitalia slide No. 662 ". In the British Museum (Natural History).

Type of *Gonoreta ansorgei* Warren. Holotype ♀, NIGERIA, Agberi, 4.vii.1901 (*Ansorge*) ; Drepanidae genitalia slide No. 665. In the British Museum (Natural History).

Paralectotype. Same data as lectotype ; Drepanidae genitalia slide No. 663. In the British Museum (Natural History).

Other material. *British Museum (Natural History)*. NIGERIA : 1 ♂, Lagos, 25.vii.1906 (*Boag*) ; 1 ♀, Lagos, iv.1961 (*Boorman*) ; 1 ♂, Old Calabar. CAMEROUN : 1 ♂, Johann-Albrechts Höhe, 1896 (*Conradt*). *Zoologisches Museum, Berlin*. CAMEROUN : 1 ♀, Kribi.

### *Gonoreta cymba* sp. n.

(Text-figs. 131-133 ; Pl. 8, fig. 300 ; Map 4)

DESCRIPTION. ♂. Palp dull scarlet. Front of head dull scarlet becoming reddish brown anterior to antennae, vertex reddish brown. Antenna buff.

Thorax brownish white, darker posteriorly ; scales with dark band just before apex. Anterior part of ventral surface of thorax dull scarlet below and at sides of eye, buff above eye ; rest of thorax pale buff. Front surface of front fore legs dull scarlet ; outer surface of mid and hind legs scarlet or orange, with some buff scales ; remaining surfaces of legs buff.

Shape and colour-pattern of wings as in Plate 8, fig. 300 (only two specimens from Uganda, mentioned below, do not accurately match the figured colour-pattern). Ground-colour of upper surface of both wings very pale greyish brown (holotype), or reddish grey (two Uganda males) ; weakly marked with darker speckles and striations, except for one of the males from Uganda which is strongly marked on the fore wing and anal margin of hind wing. Subterminal fascia of fore wing brown or dark brown ; edged distally with white, especially near tornus. Brown medial shade distinctly marked on fore wing only. Under surface of fore wing dull greyish red faintly speckled with grey ; costa buff ; grey postmedial fascia turned inwards just before costa ; under surface of hind wing pale buff proximally, dull greyish red distally ; very faintly speckled and striate with grey.

GENITALIA as in Text-figs. 131-133. Stout, arcuate, posterior arms of eighth abdominal sternum characteristic. The eighth sternum is slightly asymmetric.

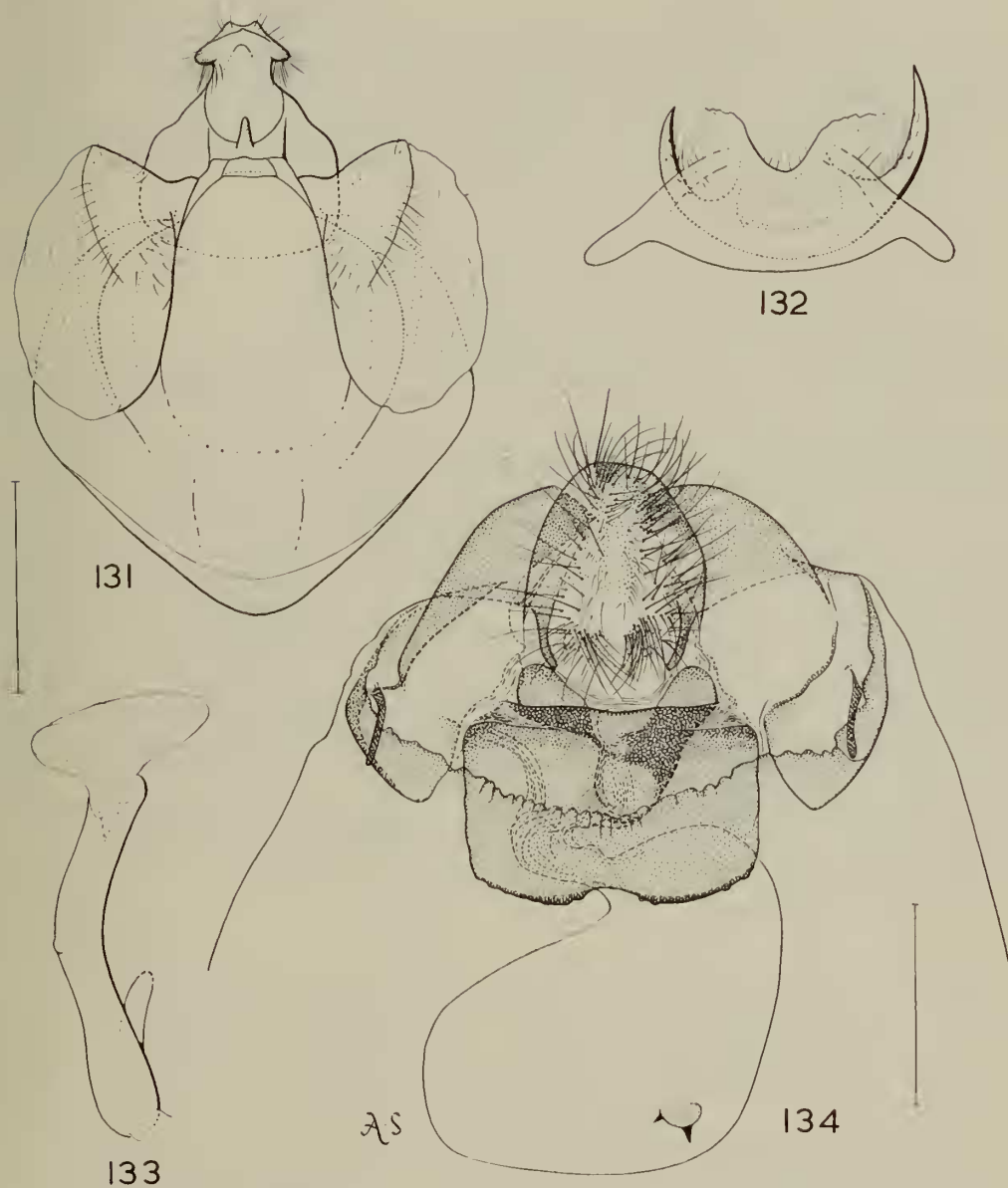
♀. Not known.

MEASUREMENTS. A.P.R. : ♂. 9. Wing : ♂. 15.0, 14.5-15.0 mm. (5).

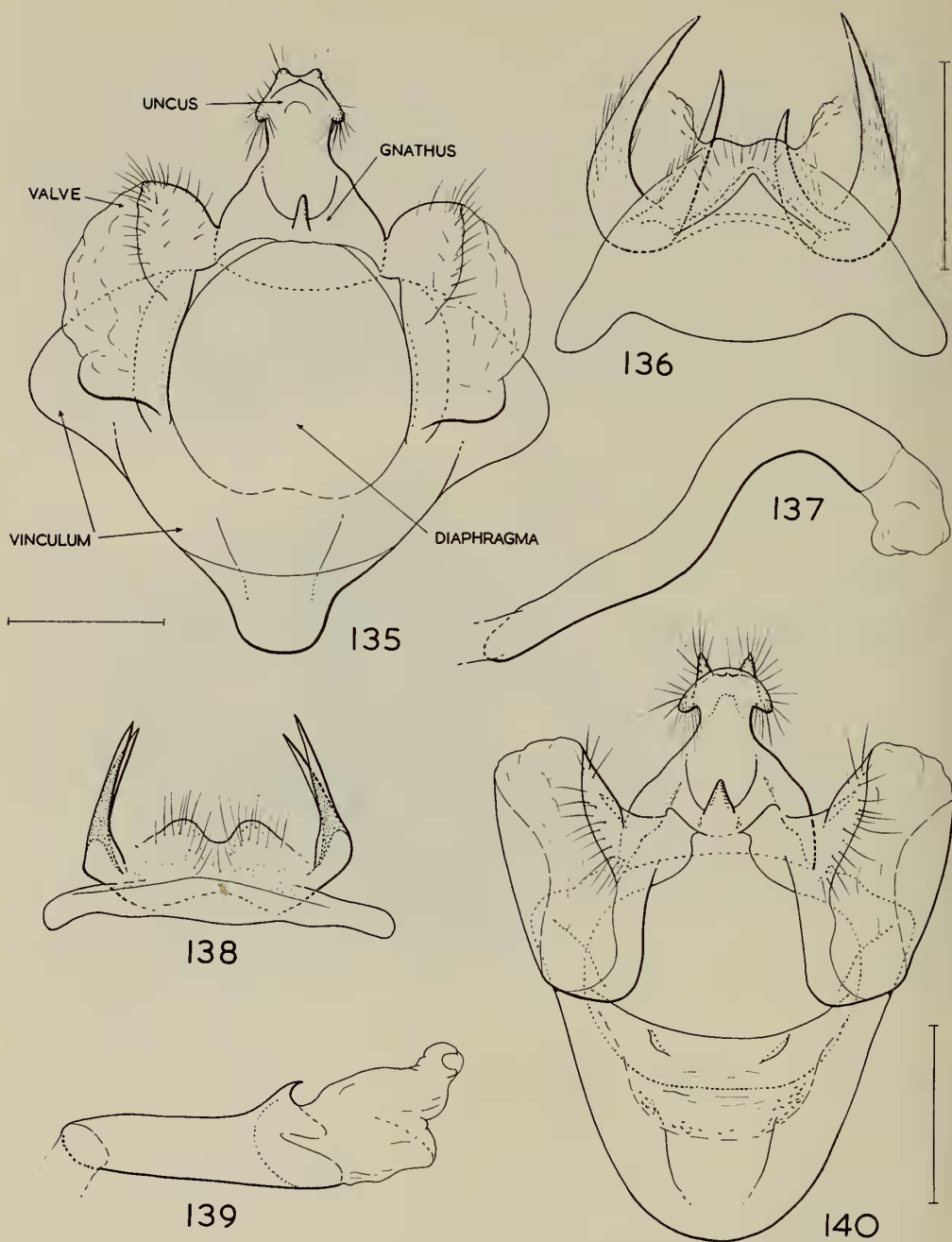
DISCUSSION. This species may be closely allied to *contracta*, but until female specimens are available there is insufficient evidence for this to be stated with certainty.

The variation in the colour of the ground-colour of the upper surface of the wings is mentioned in the description. The majority of the remaining specimens are relatively uniform in coloration and colour-pattern and can be distinguished from most specimens of *contracta*, which *cymba* resembles externally, by the almost complete absence of dark speckles and striations.

DISTRIBUTION (Map 4). Known only from NIGERIA and UGANDA.



FIGS. 131-134, *Gonoreta*, genitalia. 131-133, *cymba*. 131, ♂; 132, ♂ eighth abdominal sternite; 133, aedeagus. 134, *forcipulata*, ♀.



FIGS. 135-140, *Gonoreta*, ♂ genitalia. 135-137, *forcipulata*. 135, ♂; 136, eighth abdominal sternite; 137, aedeagus. 138-140, *angulosa*. 138, eighth abdominal sternite; 139, aedeagus; 140, ♂.

MATERIAL EXAMINED. Type. Holotype ♂, NIGERIA, Port Harcourt (at light), 21.iv.1958 (MacNulty) ; Drepanidae genitalia slide No. 1244 ; in the British Museum (Natural History).

Paratypes. *British Museum (Natural History)*. NIGERIA : 3 ♂, Port Harcourt, 20.ii.-27.x.1955 (MacNulty) ; 1 ♂, Lagos, 23.v.06 (Boag). *Coryndon Museum, Nairobi*. UGANDA : 1 ♂, Toro, Bwamba, ix.1961 (Mitton) ; 3 ♂, Masaka, Sango Bay, Katera, x.1960 (Carcasson). *National Museum of Southern Rhodesia, Bulawayo*. UGANDA : 1 ♂, Sango Bay, Katera, x.1960.

### *Gonoreta forcipulata* sp. n.

(Text-figs. 134-137 ; Pl. 7, fig. 295 ; Map 4)

DESCRIPTION. ♂, ♀. Palp scarlet. Head scarlet immediately above labrum becoming darker dorsally except at base of antenna. Dorsal surface of antennal shaft and dorso-posterior margin of head buff.

Dorsal surface of thorax nearly white anteriorly ; remainder greyish white, each scale whitish with dark band near apex. Ventral surface of thorax pale buff except for region surrounding eyes which is buff above eyes and scarlet lateral to and below eyes. Front surface of prothoracic leg scarlet, rest of leg buff ; other legs with some scarlet scales on front surface.

Wing shape and colour-pattern as in Plate 7, fig. 295. Ground-colour of upper surface of fore wing pale grey, with reddish brown medial shade and dark brown speckling and striations ; subterminal markings very dark brown near tornus ; fringe dark brown. Upper surface of hind wing pale pinkish brown proximally, becoming darker distally ; fringe light reddish brown with dark brown outer edge ; trace of medial shade in some specimens (e.g. Plate 7, fig. 295) but not in holotype. Under surface of both wings orange (holotype), reddish orange or orange-buff, sometimes suffused with grey on fore wing (holotype), usually slightly paler at base of hind wing ; both wings speckled and striate with grey ; grey postmedial fascia present on fore wing, nearly straight posteriorly but turned sharply inwards away from apex near costal margin of wing.

♂ GENITALIA as in Text-figs. 135-137. The forcipulate posterior processes of the eighth sternum are particularly characteristic.

♀ GENITALIA with unusual, slightly concave plate immediately anterior to ostium (Text-fig. 134).

MEASUREMENTS. A.P.R. : ♂. 9 ; ♀. 8. Wing : ♂. 18.0, 17.0-18.5 mm. (3) ; ♀. 19.0, 18.0-19.5 mm. (2).

DISCUSSION. The colour-pattern and coloration is similar to that of both *differentiata* and *contracta* but the three species can be readily distinguished by the male and female genitalia. The closest relative of *forcipulata* is probably *angulosa*, but the greyer coloration and the shape of the hind wing make separation of the two species a simple matter without the use of genitalic characters.

The ground-colour of both surfaces of the wings is subject to considerable individual variation : it may be one of many shades of mainly pinkish grey on the upper surface of the fore wing, and on the hind wing one of a similar range of colours including darker tones than on the fore wing. The degree of speckling or striation also varies.

DISTRIBUTION (Map 4). CONGO, NORTHERN RHODESIA and UGANDA.



MATERIAL EXAMINED. Type. Holotype ♂, CONGO, Elisabethville, 21.v.1953 (*Seydel*); Drepanidae genitalia slide No. 672; in the Musée Royal de l'Afrique centrale, Tervuren.

Paratypes. *British Museum (Natural History)*. N. RHODESIA: 1 ♀, N'kana (*Ellison*). CONGO: 1 ♀, Ishibwili, 25.iii.25; 1 ♂, Elisabethville, 20.v.1953 (*Seydel*). UGANDA: 1 ♀, Kigezi District, Kanunga, Impenetrable forest, 4,500 ft., v.1952. (*Burgess*). *Musée Royal de l'Afrique ventrale, Tervuren*. CONGO: 1 ♀, Paulis, 2.iv.1957 (*Fontaine*). *Coryndon Museum, Nairobi*. UGANDA: 2 ♂, Ankole, Kalinzu forest, v.1952, xi.1961 (*Pinhey, Carcasson*).

### *Gonoreta angulosa* sp. n.

(Text-figs. 138-140; Pl. 8, fig. 299; Map 4)

DESCRIPTION. ♂. Palp dull scarlet. Head buff (holotype) or dull scarlet above labrum, becoming dark reddish brown dorsally between and below antennae; dorso-posterior margin of head buff. Antenna buff. Anterior margin of dorsal surface of thorax nearly white; rest of thorax very pale grey. Ventral surface of thorax dull scarlet anteriorly lateral and ventral to eyes, buff dorsal to eyes; remainder pale buff. Front surface of fore legs dull scarlet, rear surface pale buff; remaining legs similarly coloured but less intensely red on outer surface.

Wing shape and colour-pattern as in Plate 8, fig. 299. Outer margin of hind wing distinctly angled at  $Cu_{1a}$ . Ground-colour of upper surface of both wings pale grey with weak pink suffusion, speckled with black; costal markings nearly black; medial shade of fore wing greyish brown; subterminal fascia markings almost black anterior to  $Cu_{1b}$ , remainder brown; fringe dark brown between ends of veins, buff at vein ends. Hind wing with greyish brown distal area not extending to outer margin, leaving narrow grey band at margin; fringe as for fore wing. Under surface of fore wing dull reddish grey, speckled with grey; costa dull buff; postmedial fascia grey, angled inwards just before costa. Under surface of hind wing more reddish than fore wing distally, dull buff proximally; speckled with grey, more densely at anterior margin.

♂ GENITALIA as in Text-figs. 138-140. The hooked thorn-like process at the end of the aedeagus and the four elongate eighth sternal processes are particularly characteristic.

♀. Not known.

MEASUREMENTS. A.P.R.: ♂. 9. Wing: ♂. 15.5, 15.0-16.0 mm. (3).

DISCUSSION. The facies of this species most closely resembles that of *forcipulata* but the angulate hind wing and the distinctive male genitalia of *angulosa* readily diagnose it. It would be particularly interesting to discover whether the female genitalia of *angulosa* has a pre-ostial plate as in *forcipulata*.

DISTRIBUTION (Map 4). UGANDA and N. E. CONGO.

MATERIAL EXAMINED. Type. Holotype ♂, UGANDA, Masaka, Sango Bay, Katera, x.1960 (*Carcasson*); Drepanidae genitalia slide No. 1363; in the British Museum (Natural History).

Paratypes. *Coryndon Museum, Nairobi*. UGANDA: 18.x.1960 (*Carcasson*). *Musée Royal de l'Afrique centrale, Tervuren*. CONGO: 1 ♂, Uele, Paulis, 4.iii.1959 (*Fontaine*).

*Gonoreta opacifinis* sp. n.

(Text-figs. 141-144 ; Pl. 7, fig. 296 ; Map 4)

DESCRIPTION. ♂. Palp scarlet. Head scarlet except for buff dorsoposterior margin and reddish brown medial patch anterior to base of antennae. Antennae buff.

Dorsal surface of thorax pale purplish grey ; ventral surface of thorax buff, but with scarlet anterior margin below eyes. Legs scarlet on front or outer surface, buff on inner surface ; fore legs most intensely coloured.

Colour-pattern of wings as in Plate 7, fig. 296. Ground-colour of upper surface of fore wing purplish grey (holotype) reddish grey, or reddish buff distal to end of cell, reddish buff at base of wing, weakly striate ; costa orange-buff ; medial shade purplish grey (holotype) or reddish brown ; cell-spots dark grey ; subterminal fascia reddish brown, less lustrous than rest of wing, irregularly edged distally with white scales, especially at tornus which is dark purplish grey (holotype) or reddish brown ; fringe reddish brown. Ground-colour of hind wings as for fore wing proximally, but reddish brown and less lustrous distally posterior to *Rs* ; trace of medial shade ; cell-spots white ; fringe reddish brown. Under surface of fore wing proximally orange-scarlet posterior to cell but orange in and above cell ; reddish grey distal to end of cell, with marginal, darker, purplish grey region between tornus and *Cu*<sub>1a</sub> ; speckled and striate with purplish grey. Under surface of hind wing orange, becoming purplish grey distally and anterior to cell ; speckled and striate distally and anteriorly.

Abdomen as for corresponding adjacent surfaces of wings except for longitudinal, narrow, scarlet band on either side.

♂ GENITALIA as in Text-figs. 141-143. Processes of eighth abdominal sternum massive, multispinous ; diaphragma with ventrally directed, medial diverticulum (displaced to right in Text-fig. 141).

♀. As for male. ♀ GENITALIA as in Text-fig. 144.

MEASUREMENTS. A.P.R. : ♂. 10 ; ♀. 9. Wing : ♂. 20.0, 18.5-21.0 mm. (16) ; ♀. 23.5 mm. (1).

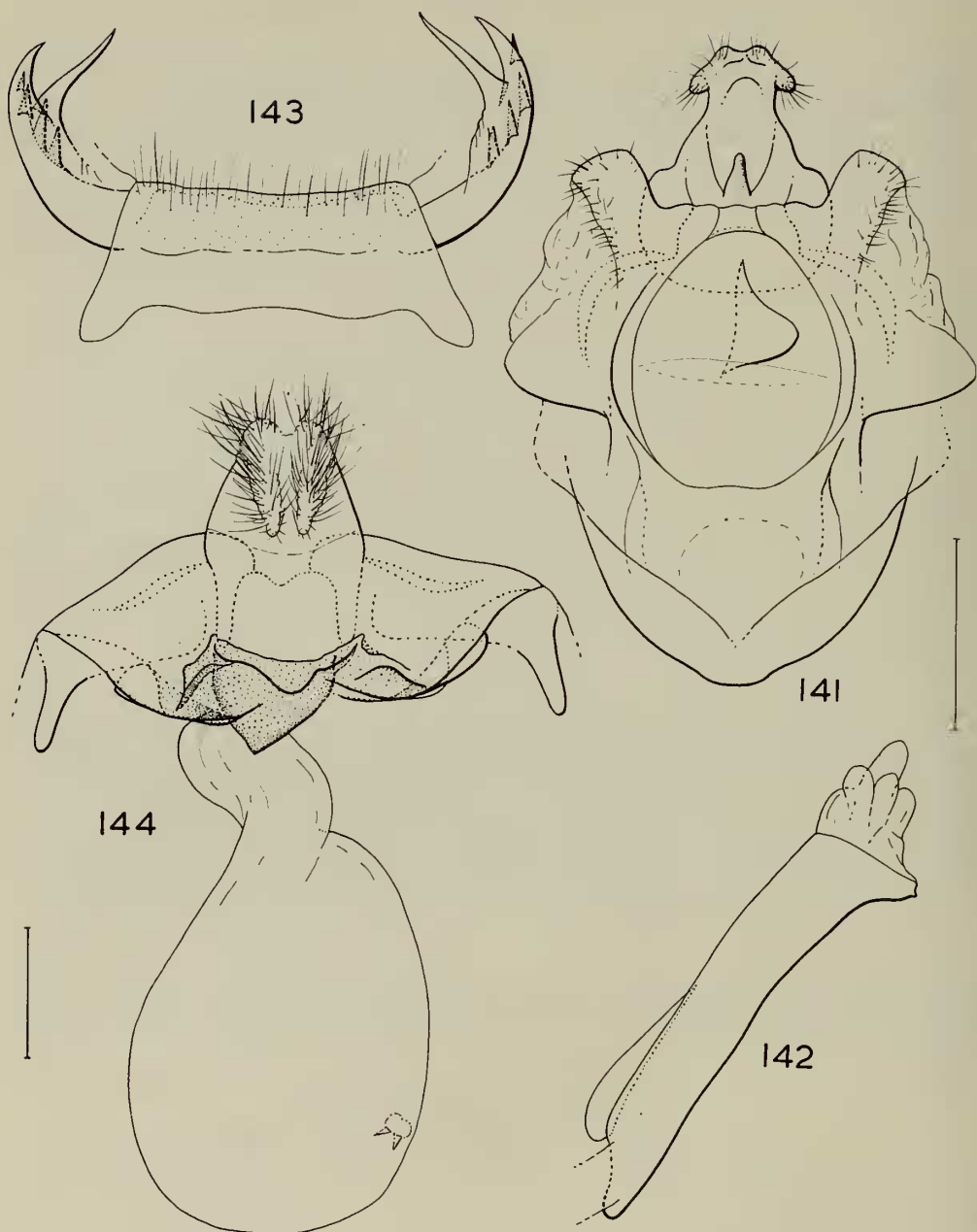
DISCUSSION. The similarity in the colour-pattern of the wings, the length of the antennal pectinations and the shape of the apical part of the aedeagus suggest that there may be close affinities between *opacifinis* and *bispina*, and that either *bispina* (a Madagascan species) is a derivative of *opacifinis* or that at least these two species have a common origin. The male genitalia (especially the shape of the eighth sternum), the presence of a signum in the female genitalia, and the more conspicuous, white-edged, subterminal fascia of the fore wing separate *opacifinis* from *bispina*.

Individual variation in the coloration has been mentioned in the description. Fresh specimens such as those recently collected in Uganda by R. H. Carcasson clearly show this variation in the intensity of the coloration of the upper surface of the wings.

DISTRIBUTION (Map 4). Known to occur in SIERRA LEONE, IVORY COAST, NIGERIA, CONGO, UGANDA, and as far south as SOUTHERN RHODESIA.

MATERIAL EXAMINED. Type. Holotype ♂, UGANDA, Ankole, Kalinzu Forest, xi.1961 (Carcasson) ; Drepanidae genitalia slide No. 1367 ; in the British Museum (Natural History).

Paratypes. *British Museum (Natural History)*. CONGO : 1 ♂, Région de M'Pala (Guillemé) ; 1 ♂, W. Kivu, Upper Lowa Valley near Masisi, forest and long grass, 5,000-6,000 ft., ii.1924 (Barns). NIGERIA : 1 ♂, Lagos, ii.1961 (Boorman) ; 1 ♀, Ibadan, 29.iv.1962 (Sutton). IVORY COAST : 4 ♂, Bingerville, 1914, vii-viii.1914



FIGS. 141-144, *Gonoreta opacifinis*, genitalia. 141, ♂; 142, aedeagus; 143, ♂ eighth abdominal sternite; 144, ♀.

(*Mélou*). SIERRA LEONE : 1 ♂, Freetown, Mt. Aureol, xii.1955 (*Phipps*). *Coryndon Museum, Nairobi*. UGANDA : 2 ♂, type locality, xi.1961 (*Carcasson*). *National Museum, Bulawayo*. S. RHODESIA : 2 ♂, Umtali, Vumba Mts., ii,iii.1961. *Institut d'Enseignement et de Recherches tropicales, Bondy*. IVORY COAST : 3 ♂, Nimba, i.viii.1956, 29.i.1957 (*Réal*) ; 1 ♂, Adiopodoumé (*Réal*). *Musée Royal de l'Afrique centrale, Tervuren*. CONGO : 1 ♂, Uele, Paulis, 3.vii.1956 (*Fontaine*) ; 1 ♂, Rwankwi, 19.ix.1947 (*Leroy*). *Muséum national d'Histoire naturelle, Entomologie agricole tropicale, Paris*. IVORY COAST : 1 ♂, Bingerville, U.V., 20.ix.1962 (*Pujol*) ; 1 ♂, Bouaki, 3.ii.1946 (*Delattre*).

### *Gonoreta bispina* sp. n.

(Text-figs. 145–148 ; Pl. 8, fig. 304 ; Map 4)

DESCRIPTION. ♂. Palp scarlet. Head scarlet with buff dorsoposterior margin. Antennal shaft buff dorsally.

Dorsal surface of thorax purplish brown with nearly white anterior margin ; except at anterior margin of thorax the scales are white-tipped with dark band immediately below tip. Ventral surface of thorax orange, but scarlet anteriorly at side of eye and buff above level of eyes. Legs scarlet on outer surface, orange on inner surface ; fore legs the most intensely coloured.

Colour-pattern and shape of wings as in Plate 8, fig. 304. Ground-colour of upper surface of fore wing purplish grey, transversely striate with dark grey especially posteriorly ; medial shade and cell-spots purplish grey ; subterminal fascia reddish brown, edged distally with white. Upper surface of hind wing dull purplish brown, with darker medial shade and whitish cell-spots. Under surface of both wings dull scarlet-orange, becoming less reddish proximally on fore wing and posteriorly on hind wing ; irregularly marked with red and grey striations. Fore wing with well marked, broad, dark grey, postmedial fascia ; hind wing with trace of this fascia at anterior margin.

Abdomen purplish brown above, except for orange posterior tufts ; scarlet-orange beneath.

♂ GENITALIA as in Text-figs. 145–147. Aedeagus with short apical spine.

♀. Most specimens differ from the male in the following respects : fore wing less strongly falcate ; ground-colour of fore wing usually yellowish brown, strongly striate, and ground-colour of hind wing dull yellow-brown ; under surface of both wings buff or pale orange, usually without, but in some specimens with, trace of postmedial fascia ; abdomen as for colour of adjacent surfaces of hind wing. Four of the females examined, however, were similar in colour to males.

♀ GENITALIA (Text-fig. 148) without signum on bursa copulatrix.

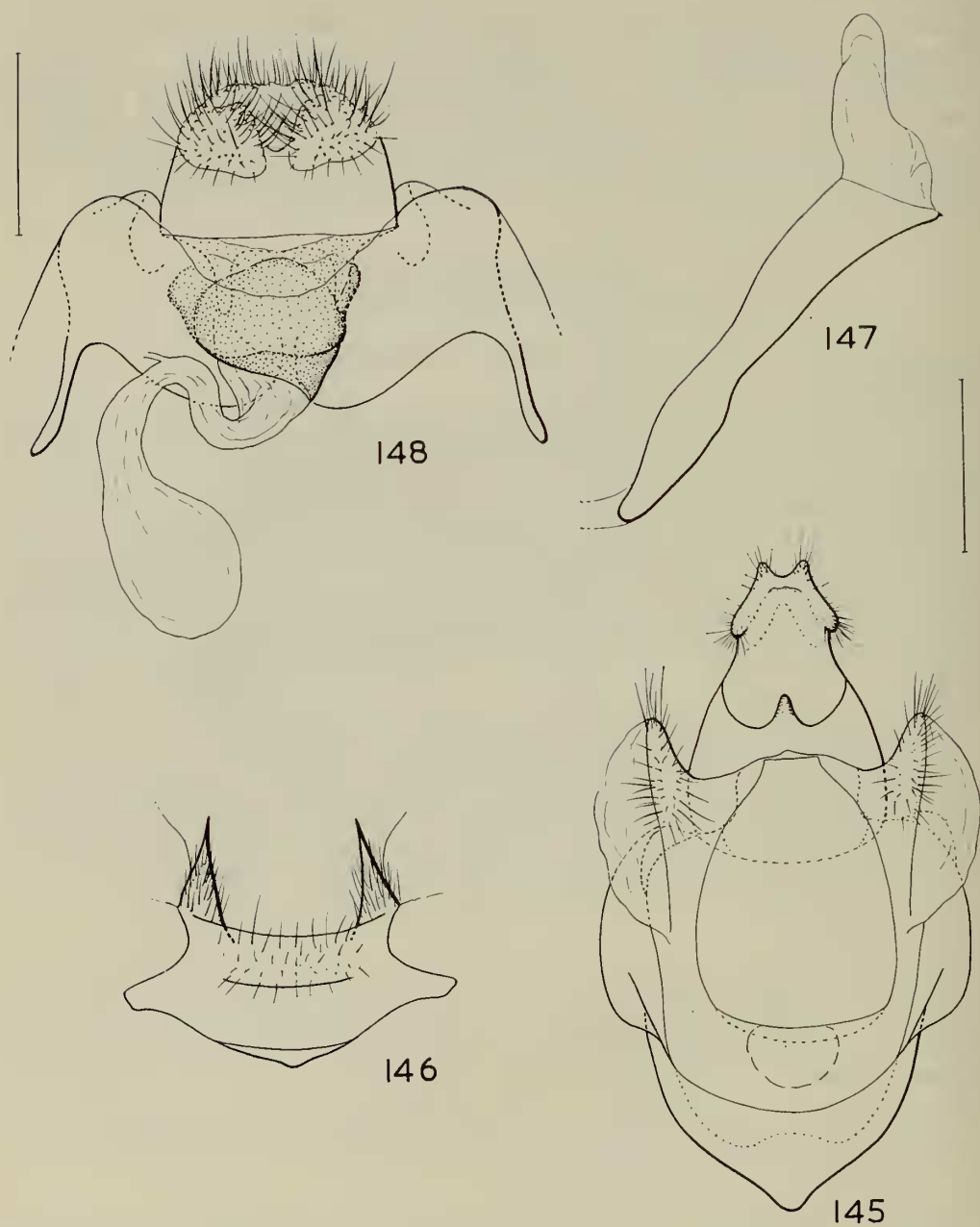
MEASUREMENTS. A.P.R. : ♂. 10 ; ♀. 6. Wing : ♂. 17.0, 14.5–18.0 mm. (7) ; ♀. 18.5, 17.0–21.0 mm. (11).

DISCUSSION. The close similarity in the colour-pattern, the shape of the apical part of the aedeagus, and the length of the antennal pectinations in the males (A.P.R. = 1 in both species) suggest a close affinity between this species and the African *opacifinis*. The shape of the eighth abdominal sternum in the male readily separates *bispina* from *opacifinis*.

There is little individual variation in the males examined, but four of the females have darker, less strongly striate wings as in the males.

DISTRIBUTION (Map 4). MADAGASCAR.

MATERIAL EXAMINED. Type. Holotype ♂, MADAGASCAR EST, Route d'Anisobe km. 57, 18.ii.1955 (*Viette*) ; Drepanidae genitalia slide No. 619 ; in the Muséum national d'Histoire naturelle, Paris.



FIGS. 145-148, *Gonoreta bispina*, genitalia. 145, ♂; 146, ♂ eighth abdominal sternite; 147, aedeagus; 148, ♀.



Paratypes. *Muséum national d'Histoire naturelle, Paris.* EAST MADAGASCAR : Type locality, 1 ♂, 1 ♀, 15–18.ii.1955 (*Viette*) ; 7 ♀, env. de Périnet, forêt d'Analamazoatra, 910 m., 12.i.–18.iii.1955 (*Viette*) ; 1 ♂, 3 ♀, route de Lakato, km. 15 Ankasoka, 1,100 m., 2–10.i.1959, (*Viette*), 3.xi–1.xii.1956, 23.x.1957 (*Griveaud*) ; 2 ♂, 1 ♀, Sud Moramanga, Ampitameloka, 840 m., 2, 6.viii.1956 (*Griveaud*) ; 2 ♂, Réserve nat. III, Ambatovositra, Andranomalaza, xi.1956, ii.1957 (*Soga*). SOUTH-EAST MADAGASCAR : 1 ♂, forêt de Befotaka, Midongy du Sud, 950 m., 3–7.iii.1959 (*Viette and Griveaud*). *Institut de Recherche scientifique, Madagascar.* EAST MADAGASCAR : 1 ♂, Réserve nat. III Andranomalaza, Ambatovositra, xii.1956 (*Soga*) ; 2 ♂, dct. Moramanga, Fanovana, xi.1960 (*Griveaud*) ; 5 ♂, Sud Moramanga Ampitameloka, 840 m., 1–6.viii (*Griveaud*) ; 1 ♀, Moramanga, Ankasoka, 1,130 m., 1.x.1957 (*Griveaud*). CENTRAL MADAGASCAR : 2 ♂, La Mandraka, Manjakandriana, 1, 2.xi.1956 (*Griveaud*). N.W. MADAGASCAR : 1 ♂, Sambirano, Analava, Poste Maromandia, Manongarivo, 1,150 m., xii.1960 (*Griveaud*).

### *CONORETODES* gen. n.

(Gender : feminine)

(Text-figs. 149–152 ; Pl. 17, fig. 341)

Type-species : *Gonoretodes timea* sp. n.

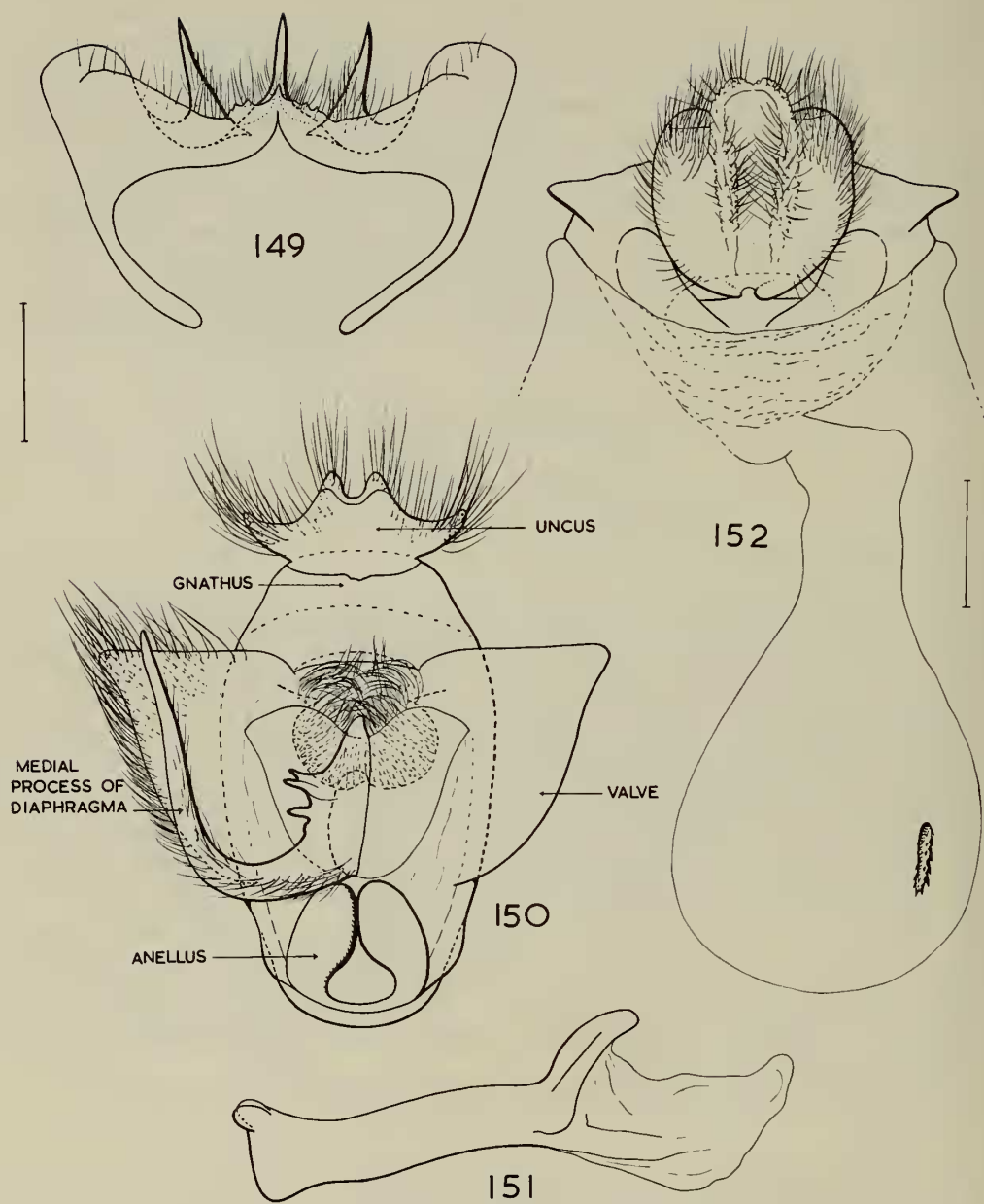
DESCRIPTION. ♂, ♀. Clypeo-frons swollen ventrally ; palpi minute, not extending as far as labrum ; galeae of maxilla short, not fused ; antenna unipectinate from base to apex.

Mid and hind tibia each with one pair of short terminal spurs. Costa of fore wing slightly concave ; outer margin bluntly toothed at  $Cu_{1a}$ . Outer margin of hind wing convex ; anal margin slightly concave. Venation similar to *Gonoreta* Warren but vein  $R_1$  in fore wing arises from distal half of areole, and  $Sc + R_1$  anastomoses with  $R_s$  for short distance distal to end of cell in hind wing. Upper surface of both wings yellow speckled with brown ; fore wing with antemedial fascia, postmedial fascia, terminal fascia, and white discocellular spot ; hind wing with poorly marked antemedial fascia and postmedial fascia posteriorly, and with terminal fascia anteriorly, cell-spot as for fore wing. Under surface of both wings a more intense yellow than upper surface, both similarly speckled with brown ; fore wing with reddish postmedial fascia and terminal fascia and dark-edged white discocellular spot ; hind wing with small discocellular spot, and trace of postmedial and terminal fasciae anteriorly.

♂ GENITALIA : valve broad, without sclerotized processes ; diaphragma well sclerotized ventrally, with long medial process arising near aedeagus, and bilobed, invaginate, setose, sensory sac immediately anterior to gnathus ; anellus strongly developed ; gnathus a broad plate ; uncus with two pairs of setose processes ; caecum penis bilobed ; eighth tergum little modified, with very short lateral apodemes ; eighth sternite with long apodemes and three heavily sclerotized posterior processes.

♀ GENITALIA : bursa copulatrix with single, elongate, scobinate signum ; eighth segment with digitate, lateral processes on either side ; ninth segment densely setose.

DISCUSSION. Superficially this new genus resembles *Gonoreta* Warren, but the conspicuous unipectinate (not unilamellate) antennae at once separate it from the latter. The anastomosis of  $Sc + R_1$  with  $R_s$  for a short distance in the hind wing and the position of  $R_1$  in the fore wing ( $R_1$  arises from the areole, not the cell) also distinguish this genus from *Gonoreta*. The male and female genitalia are strikingly different from those of *Gonoreta* except in the shape of the uncus. The sensory sac



FIGS. 149-152, *Gonoretodes timea*, genitalia. 149, ♂ eighth abdominal sternite ; 150, ♂ ; 151, aedeagus ; 152, ♀.

and medial process in the diaphragma of the male genitalia are particularly distinctive. In coloration *Gonoretodes* most closely resembles the genera *Oreta* Walker and *Psiloreta* Warren, more especially the Indian *Psiloreta sanguinea* (Moore), although the affinities are probably less close than between *Gonoretodes* and *Gonoreta*.

The genus is at present known only from the type-species, which is confined to Madagascar and perhaps the islands of the Comores Archipelago.

### *Gonoretodes timea* sp. n.

(Text-figs. 149-152 ; Pl. 17, fig. 341)

DESCRIPTION. ♂, ♀. Palp scarlet. Front of head scarlet except for buff medial patch ventrally ; vertex dull yellow ; shaft of antennae yellow, darkest proximally, with scarlet tuft at base ; posterior margin of head with scarlet fringe laterally and ventrally.

Dorsal surface of thorax purplish white, darkest posteriorly, but with yellow transverse band at anterior margin. Ventral surface of thorax buff. Front surface of whole of fore leg scarlet, rear surface dull yellow ; mid and hind leg yellow except for scarlet outer surface of tarsus.

Upper surface of both wings (Plate 17, fig. 341) yellow ; moderately lustrous except for marginal band of hind wing between  $M_2$  and anal angle ; variably speckled with reddish brown. Fore wing with reddish brown antemedial and postmedial fascia ; reddish brown medial shade sometimes present between latter fasciae ; discocellular spot white, conspicuous ; terminal markings dark brown, edged distally with white, most strongly developed at tornus, absent at  $Cu_{1a}$  ; fringe pale grey apically and at  $Cu_{1a}$ , remainder dark grey, tipped with pale grey. Hind wing with conspicuous, white discocellular spot ; weakly developed antemedial fascia, postmedial fascia and medial shade in anterior half of wing ; white subterminal markings at outer angle bordered by reddish brown area ; fringe pinkish white posterior to  $R_s$ , dark brown anterior to  $R_s$ .

Under surface of both wings yellow (more deeply saturated yellow than upper surface) lightly speckled with reddish brown and dark brown. Discocellular spot of fore wing dark reddish brown with whitish centre ; postmedial fascia reddish brown, less strongly marked than on upper surface ; terminal fascia purplish brown edged distally with purplish white, interrupted at  $Cu_{1a}$  ; fringe as for upper surface. Discocellular spot of hind wing as for fore wing ; weakly developed postmedial fascia present anterior to cell ; terminal fascia as for upper surface but less strongly marked ; fringe pale yellow posterior to  $R_s$ , dark brown anterior to  $R_s$ .

Dorsal surface of abdomen reddish buff except for yellow caudal vestiture. Ventral surface of segments 3 to 6 dull scarlet ; remaining sterna pale buff.

♂ GENITALIA (Text-figs. 149-151) : valve broad, flattened ; gnathus without processes ; diaphragma heavily sclerotized medially, with long, posteriorly directed, medial process (displaced to left in Text-fig. 150) bilobed, invaginate, setose, sensory sac immediately anterior to gnathus ; anellus strongly sclerotized ; uncus with two pairs of digitate processes ; apodemes of eighth sternite arcuate, posterior margin of sternite with three large heavily sclerotized spines.

♀ GENITALIA (Text-figs. 152) : ostium opening into sclerotized invaginate pocket ; eighth segment with digitate process laterally ; ninth segment densely setose.

MEASUREMENTS. A.P.R. : ♂. 25 ; ♀. 18. Wing : ♂. 21.5, 18.5-24.5 mm. (12) ; ♀. 24.0, 22.0-24.5 mm. (5).

DISCUSSION. Some individual variation is present in the intensity of the coloration of the wings. There is also variation in the medial shade, which may be poorly marked (holotype) or well marked on the upper surface of both wings.

DISTRIBUTION. Known only from central, east, north-east and north-west MADAGASCAR.

MATERIAL EXAMINED. Type. Holotype ♂, dct. de Moramanga, Fanovana, xi.1960 (*Griveaud*) ; Drepanidae genitalia slide No. 1540 ; in the Institut scientifique, Madagascar.

Paratypes. *Institut scientifique, Madagascar*. CENTRAL MADAGASCAR : 1 ♀, District d'Ambatalampy, Andranotobaka, 1,400 m., iv.1957 (*Griveaud*). EAST MADAGASCAR : 3 ♂, District de Moramanga, Route de Lakato, Ankasoka 1,130 m., 21.x.1957 (*Griveaud*) ; 1 ♀, Moramanga, Fanovana, xi.1960 (*Griveaud*) ; 2 ♂, Moramanga, Italaviana, 6 km., N.O. de Fanovana, 4,9.vi.1956 (*Griveaud*) ; 2 ♂, sud Moramanga, Ampitamelo, 840 m., 1.viii.1956 (*Griveaud*). N.E. MADAGASCAR : 2 ♂, dct. de Sambava, Andasy II, 1,550 mm., xii.1958 (*Griveaud*), v.1959 (*Soga*) ; 3 ♂, Sambava, Réserve naturelle intégrale XII, Moroejy Ouest, 1,140 m., xi.1959, ii.1960 (*Soga*). N.W. MADAGASCAR : 2 ♂, Sambirano, Manongarivo, dct. d'Analalava, Poste Maromandia, 1,150 m., xii.1960 (*Griveaud*).

### *SPIDIA* Butler

(Text-figs. 153-187 ; Pls. 9, 10, figs. 305-311 ; Map 5)

*Spidia* Butler, 1878 : 460. Type-species, by original designation and monotypy, *Spidia fenestrata* Butler, 1878.

*Spidia* Butler ; Gaede, in Seitz, 1927 b : 287.

*Spidia* Butler ; Gaede, 1931 : 51.

*Spidia* Butler ; Watson, 1957 : 113.

*Hemictenarcha* Warren, 1898 : 221. Type-species, by original designation and monotypy, *Hemictenarcha rubrisecta* Warren, 1898.

*Hemictenarcha* Warren ; Gaede, 1939 : 53.

*Phalacrothyris* Warren, 1899 : 287. Type-species, by original designation and monotypy,

*Phalacrothyris subviridis* Warren, 1899. **syn. n.**

*Phalacrothyris* Warren ; Gaede, 1931 : 52.

Butler established *Spidia* for a single new species, *fenestrata*. Aurivillius (1906) added *divisa*, Strand (1912) *excentrica*, and Gaede (1914) *fenestriculata*. The present author (Watson, 1957) synonymized *Hemictenarcha* Warren, 1898, as a junior synonym of *Spidia* Butler, 1878, sank *fenestriculata* as a synonym of *fenestrata*, relegated *divisa* to subspecific rank (*fenestrata* subsp.), described *goniata* as a new subspecies of *fenestrata* and transferred *excentrica* to *Phalacrothyris* Warren, 1899.

*Phalacrothyris*, which was erected for a new species *subviridis*, is treated as a junior synonym of *Spidia* in this paper. Warren (1902) subsequently added *smithi*, and Gaede (1927 b : 292) transferred *excentrica* from *Spidia* to *Phalacrothyris*. Gaede (1931) listed *smithi* and *subviridis* under *Phalacrothyris* and *excentrica* under both *Phalacrothyris* and *Spidia*.

Viette (1954 : 79) added *vohilava* to *Spidia* but it has been found necessary to establish a new genus *Oreopsis* for this Madagascan species (see page 145).

Three new species are added to *Spidia* in this revision and *Thymistida miserrima* Holland is transferred to *Spidia* from *Epicamptoptera* Bryk, bringing the total number of included species to nine.

DESCRIPTION. ♂, ♀. Proboscis vestigial ; labrum globose ; antenna unipectinate or unilamellate.



Meso- and metathoracic legs with one pair of apical spurs. Apex of fore wing variously falcate; outer margin evenly convex, or convex only anterior to  $Cu_{1b}$ . Hind wing either sharply angled at outer angle with almost straight outer margin, or with rounded outer angle and slightly convex outer margin. Venation of fore wing as in Text-figs. 153, 162. In the hind wing  $Sc + R_1$  anastomoses with  $R_s$  for some distance distal to end of cell.

Upper surface of both wings brown or yellow, speckled with darker tones. Oblique post-medial fascia usually present on fore wing from near apex to about middle of anal margin; several circular or irregularly shaped hyaline patches in and around distal end of cell; three dark markings equally spaced along distal half of costa. Sub-basal fascia of hind wing continuous with postmedial fascia on fore wing; discocellular spot and posterior cell-spot very dark; hyaline patches present distal to end of cell in some specimens of *subviridis*, *planola* and *excentrica*. (See Plates 9 and 10.)

Under surface of both wings paler than upper surface; variously coloured, but invariably strongly speckled with dark brown; postmedial fascia of fore wing sometimes present, hyaline patches often edged with dark scales; hind wing with trace of postmedial fascia in a few specimens (not present on upper surface).

Colour of abdomen doubtful but probably similar to corresponding adjacent surface of hind wing.

♂ GENITALIA (see labelled Text-fig. 180): uncus hood-like; gnathus with single, pointed, medial process; saccus broad, shallow; diaphragma membranous; valve bifurcate; vinculum variously produced anterior to base of valves into heavily sclerotized processes; aedeagus sometimes with lateral lobes, vesica without cornuti; eighth tergum little modified, but with short apodemes; eighth sternum weakly sclerotized, posterior margin arcuate or emarginate, apodemes long.

♀ GENITALIA variously shaped; anterior and posterior apophyses well developed; bursa copulatrix with single pair of scobinate signa; ostial segment sometimes with globose, medial lobe dorsally.

DISCUSSION. *Spidia* is probably most closely related to the Madagascan *Crociniis* Butler, which may be a derivative of *Spidia*. It can be distinguished from *Crociniis*, in the male, by the shape of the valves, saccus and eighth abdominal sternite, and by the presence of a gnathus and a poorly developed anellus. The colour-pattern and, to a lesser extent, the coloration of *Spidia* are similar to *Isospidia* gen. n., but the genitalia bear little resemblance. In the similarly patterned *Negera* Walker the transverse fasciae are much closer to the outer margin on the upper surface of both fore and hind wings than in *Spidia*, the antennae are bipectinate and the genitalia are diagnostic.

One species of this genus, *fenestrata* Butler, has already been treated critically and attention drawn to the high degree of individual variation of the coloration (Watson, 1957). Similar but less striking variation is exhibited by most species of *Spidia*.

The shape of the antenna is a diagnostic character in *rufinota*. In this species the antenna is closely lamellate unlike that in any other species of the genus, including *fenestrata* to which *rufinota* is probably closely related. The wing shape of *smithi* is quite different from that of *inangulata* but the male genitalia indicate close affinities between these two species. The remaining species, *subviridis*, *excentrica*, *planola* and *miserrima* are clearly closely related to each other.

One species, *fenestrata*, is polytypic. Two further species, *subviridis* and *smithi*, are probably polytypic.



DISTRIBUTION. Known to occur in SIERRA LEONE, IVORY COAST, GHANA, NIGERIA, CAMEROUN, ANGOLA, CONGO and UGANDA. Most of the records are from the main rain-forest regions of the Congo Basin and West Africa but the genus also occurs in areas of rain-forest and montane forest (e.g. *goniata* Watson) in Uganda.

## KEY TO SPECIES

## MALES

- 1 Antenna closely lamellate ; genitalia as in Text-figs. 164-166 . . . . . *rufinota* (p. 101)
- Antenna unipectinate ; genitalia not as above . . . . . 2
- 2 Posterior margin of eighth abdominal sternum bilobed . . . . . 3
- Posterior margin of eighth abdominal sternum entire . . . . . 6
- 3 Outer angle of hind wings evenly rounded . . . . . 4
- Outer angle of hind wing emarginate between  $Sc + R_1$  and  $R_s$ , angulate between  $R_s$  and  $M$  (Plate 9, fig. 305) . . . . . *smithi* (p. 106)
- 4 Outer margin of fore wing as in Plate 9, fig. 306 ; fore wing fenestrations usually as extensive as in above fig. ; genitalia as in Text-figs. 167-169 . . . . . *inangulata* (p. 103)
- Outer margin of fore wing more evenly arcuate (Text-figs. 153, 162) ; fore wing fenestrations usually much less extensive than in Plate 9, fig. 306 ; male genitalia quite unlike that of above species (see Text-figs. 154-161) ; posterior processes of eighth abdominal sternum small and digitate . . . . . 5
- 5 Shape and venation of fore wing as in Text-fig. 153 ; genitalia as in Text-figs. 154-158 . . . . . *fenestrata* (p. 96)
- Shape and venation of fore wing as in Text-fig. 162 ; genitalia as in Text-figs. 159-161 . . . . . *goniata* (p. 101)
- 6 Outer angle of hind wing acutely angled (Plate 9, fig. 307) ; genitalia as in Text-figs. 176, 177 . . . . . *subviridis* (p. 110)
- Outer angle of hind wing usually obtusely angled (e.g. Plate 9, fig. 308) ; genitalia not as above . . . . . 7
- 7 Aedeagus with small lateral lobe ; innermost process at base of valve not hood-like . . . . . 8
- Aedeagus without lateral lobe ; innermost processes at base of valve hood-like (Text-figs. 182, 184) . . . . . *excentrica* (p. 111)
- 8 Processes at base of valve as in Text-fig. 178 . . . . . *planola* (p. 108)
- Processes at base of valve as in Text-fig. 187 . . . . . *miserrima* (p. 112)

*Spidia fenestrata* Butler

(Text-figs. 153-158 ; Pl. 10, fig. 311 ; Map 5)

*Spidia fenestrata* Butler, 1878 : 460.

*Spidia fenestriculata* Gaede, 1914 : 65.

*Spidia fenestrata* Butler ; Watson, 1957 : 114.

*Hemictenarcha rubrisecta* Warren, 1898 : 221.

DIAGNOSIS. This species is probably most closely related to *goniata*. The male genitalia of these two species are similar in many respects but are easily distinguished by the shape of the aedeagus and of the processes at the base of the valve. The male genitalia of the two subspecies of *fenestrata* have already been illustrated (Watson, 1957), but for convenience they have been re-illustrated, in part, (Text-figs. 154-158). Externally, *fenestrata* can be separated from *goniata* by the more strongly arcuate costa, the venation of the fore wing (Text-fig. 153), and by the less strongly pectinate antennae (A.P.R. = 18).

Except for the differently shaped fore wing, the species *inangulata* is externally similar to *fenestrata* but has distinctive genitalia.

There is considerable individual variation in coloration in *fenestrata*. The specimen illustrated in Plate 10, fig. 311 shows one of the more striking colour varieties of the nominate subspecies : fore wing reddish brown proximal to the bright lemon-yellow, oblique, post-medial fascia, but greenish yellow distal to this fascia ; posterior subterminal marking dark reddish brown.

DISCUSSION. As mentioned in an earlier paper (Watson, 1957) part of the range of the subspecies *divisa* apparently lies within that of the nominate subspecies, but as there is no evidence of sympatry at any one locality I have continued to treat *divisa* as a subspecies of *fenestrata*. However, a re-appraisal of the characters separating the subspecies, *fenestrata*, *divisa*, and *goniata*, has led to the conclusion that *goniata*, described by me as a subspecies of *fenestrata*, should be treated as a separate species (see page 101).

DISTRIBUTION (Map 5). The species ranges from GUINEA across tropical Africa as far east as UGANDA. Some new material of the nominate subspecies and of *divisa* which has been examined since the last review of the species (Watson, 1957) is listed under the appropriate subspecies headings.

### *Spidia fenestrata fenestrata* Butler

(Text-figs. 154-156 ; Pl. 10, fig. 311 ; Map 5)

DIAGNOSIS. ♂. The nominate subspecies is separable from *divisa* probably only by the genitalia (Text-figs. 154-156). The shape of the eighth abdominal sternum and the processes of the vinculum anterior to the valves are particularly characteristic.

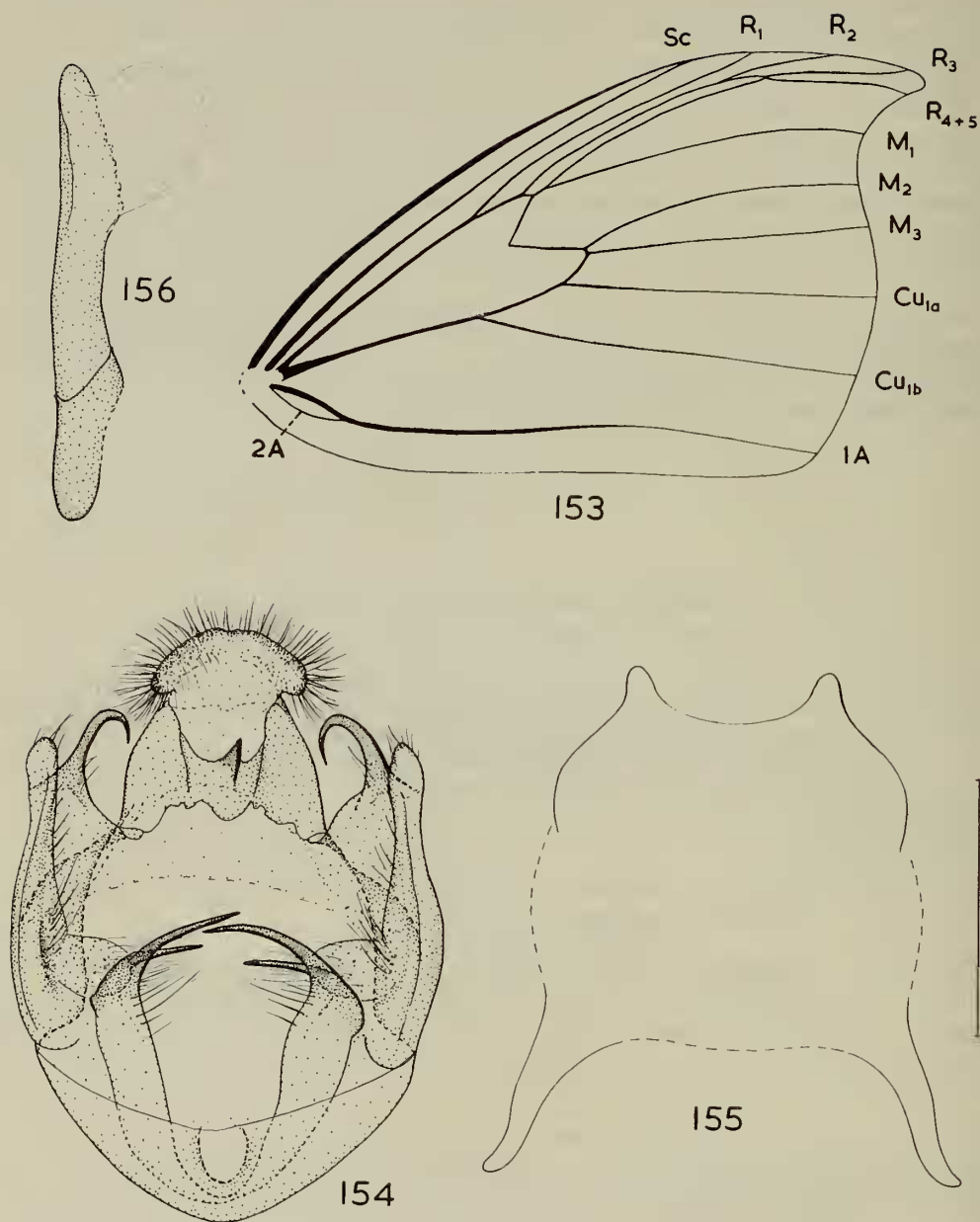
♀. As for male. Genitalia with heavily sclerotised eighth segment, deeply sulcate medially ; bursa copulatrix with pair of spinose, invaginate signa.

MEASUREMENTS. A.P.R. : ♂. 18 ; ♀. 8. Wing : ♂. 20.0. 17.5-22.0 mm. (20) ; ♀. 23.0, 22.5-24.0 mm. (4).

DISTRIBUTION (Map 5). Known from GUINEA, SIERRA LEONE, LIBERIA, IVORY COAST, GHANA, NIGERIA, CAMEROUN and ANGOLA.

MATERIAL EXAMINED. Types. Holotype ♀ of *fenestrata* Butler, NIGER, Old Calabar ; in the British Museum (Natural History). Holotype ♀ [not ♂ as originally stated] of *fenestriculata* Gaede, NIGERIA, Opobo (*Schultze*) ; in the Zoologisches Museum, Berlin. Holotype ♂ of *rubrisecta* Warren, NIGERIA, Warri, ix.97 (*Roth*) ; in the British Museum (Natural History).

Other material. In addition to the material listed in a previous paper (Watson, 1957) six more specimens have been discovered : *Institut d'Enseignement et de Recherches tropicales*, Bondy. IVORY COAST : 1 ♂, Adiopodoumé, 8.i.1957 (*Réal*). *Muséum national d'Histoire naturelle, Entomologie agricoles tropicales*, Paris. GUINEA : 1 ♀, Sérédou, 5.xi.1959 (*Pujol*). *Carnegie Museum, Pittsburgh*. LIBERIA : 2 ♂, Harbel, 13.xii.1955, 14.xii.1956 (*Fox*). CAMEROUN : 1 ♂, Batanga, 24.xi.1910 (*Good*) ; 1 ♂, Efulen (*Weber*).



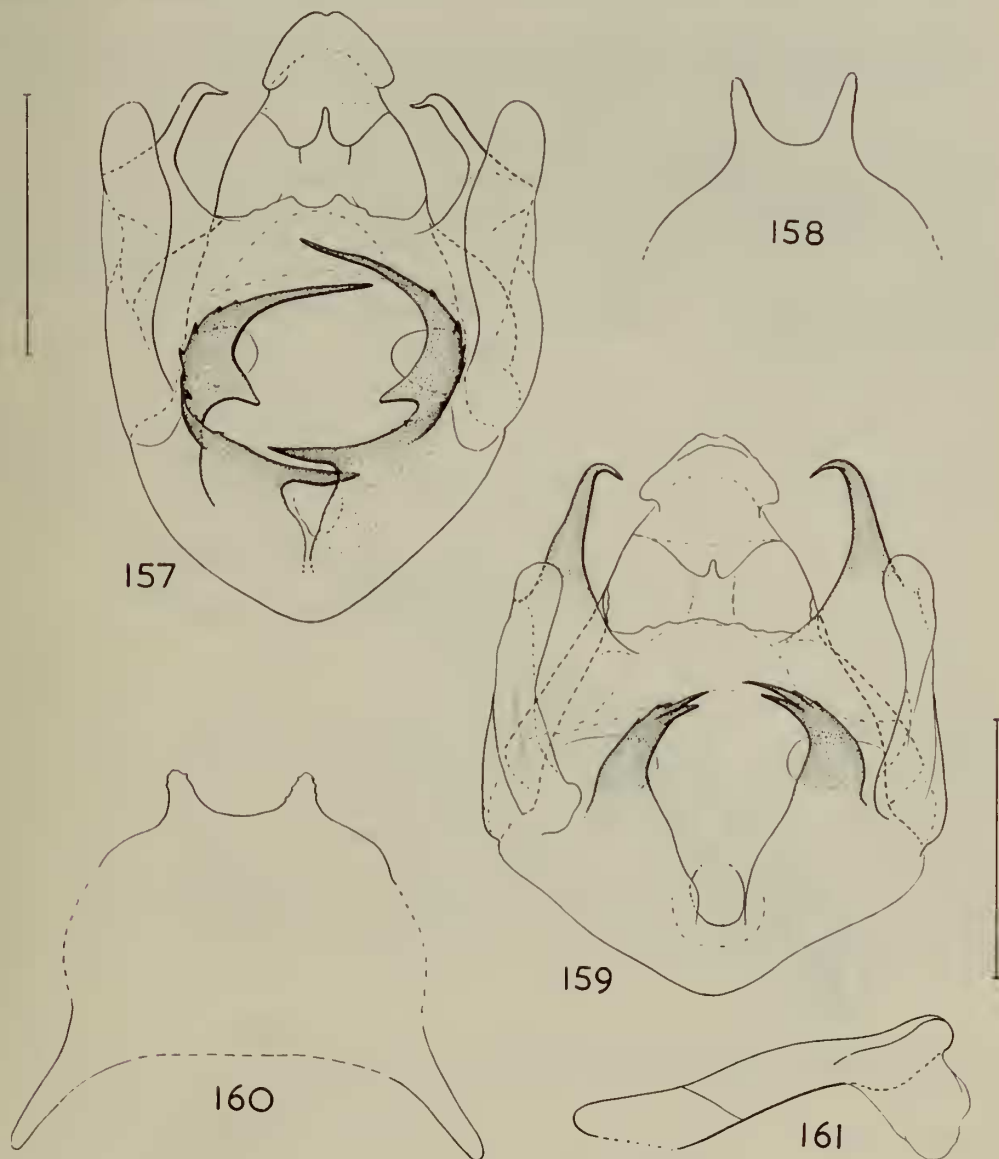
FIGS. 153-156, *Spidia fenestrata fenestrata*. 153, fore wing venation. 154-156, ♂ genitalia. 154, ♂; 155, eighth abdominal sternite; 156, aedeagus.

***Spidia fenestrata divisa* Aurivillius**

(Text-figs. 157, 158 ; Map 5)

*Spidia divisa* Aurivillius, 1906 : 10. [Good colour plate.]*Spidia fenestrata divisa* Aurivillius; Watson ; 1957 : 117.

DIAGNOSIS. ♂. Distinguished from the nominate subspecies probably only by the male genitalia (see Text-figs. 157, 158).



FIGS. 157-161, *Spidia*, ♂ genitalia. 157-158, *fenestrata divisa*. 157, ♂ ; 158, posterior margin of eighth abdominal sternite. 159-161, *goniala*. 159, ♂ ; 160, eighth abdominal sternite ; 161, aedeagus.

♀. I have recently seen a single female of *divisa* from Mukimbunga (the type locality) from the collection of the Naturhistoriska Riksmuseet, Stockholm. Externally this specimen differs from the males in the slightly more arcuate outer margin of the fore wing. Without further material, however, it is not possible to decide whether there are any significant differences in the genitalia between females of *divisa* and the nominate subspecies.

MEASUREMENTS. A.P.R. : ♂. 18 ; ♀. (Not known, antennae broken.). Wing : ♂. 22.0, 20.5-23.0 mm. (6) ; ♀. 23.5 mm. (1).

DISTRIBUTION (Map 5). As expected from the known distribution in 1957 the recently examined material listed below shows that this subspecies is distributed throughout the CONGO. It is also known from UGANDA.

MATERIAL EXAMINED. Type. Holotype ♂, CONGO, Mukimbungu (near Luozi, W. CONGO) in the Naturhistoriska Riksmuseum, Stockholm.

Other material (additional to that listed by Watson, 1957). *Musée Royal de l'Afrique centrale, Tervuren*. CONGO : 2 ♂, Equateur, Flandria, 25.viii.1931, 1935 (*Hulstaert*) ; 1 ♂, Kasai, Luluabourg, 12.v.1953 (*Fontaine*) ; 1 ♂, Sankuru, Lusambo, 20.viii.1950 (*Fontaine*). *Naturhistoriska Riksmuseet, Stockholm*. CONGO : 1 ♀, Mukimbungu (*Laman*).

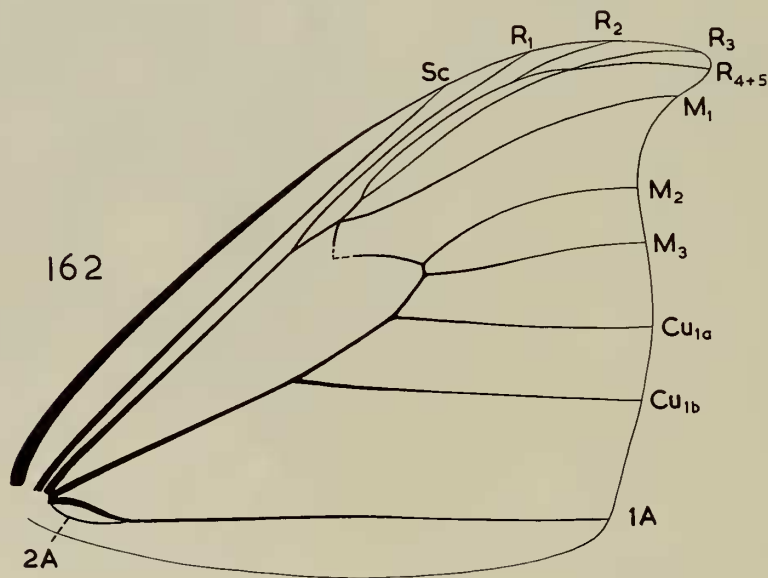


FIG. 162, *Spidia goniata*, ♂ fore wing venation.



***Spidia goniata* Watson stat. n.**

(Text-figs. 159-162 ; Map 5)

*Spidia fenestrata goniata* Watson, 1957 ; 118.

DIAGNOSIS. ♂. Similar to *fenestrata* ♂ but differing in the following respects. A.P.R. : 27 (compared with 18 in *fenestrata*) ; costal margin of fore wing less strongly arcuate (Text-fig. 162) ; outer margin more strongly arcuate ; venation at base of areole as in Text-fig. 162 ; outer margin of hind wing more strongly arcuate.

The diagnostic characters of the male genitalia were described and figured in the original description, but for convenience have been re-illustrated here (Text-figs. 159-161).

MEASUREMENTS. A.P.R. : ♂. 27. Wing : ♂. 47.5, 45.5-48.5 mm. (2).

DISCUSSION. A re-evaluation of the diagnostic morphological characters had led to the present elevation of *goniata* to specific rank. Although the male genitalia are similar in basic structure to those of *fenestrata* the different venation of the fore wing and the strikingly longer antennal pectinations provide strong evidence of specific distinction.

DISTRIBUTION (Map 5). UGANDA. It is interesting to note that both known specimens were collected in montane forest.

MATERIAL EXAMINED. Type. Holotype ♂, UGANDA, Ruwenzori Range, Nyinataba, 8,650 ft., 7.I3.viii.1952 (*Fletcher*) ; Drepanidae genitalia No. 511 ; in the British Museum (Natural History).

Paratype. *British Museum (Natural History)*. UGANDA : ♂, Ruwenzori Range, Mobuku Valley, 7,800 ft., 29-31.xii.1934 (*Edwards*).

***Spidia rufinota* sp. n.**

(Text-figs. 163-166 ; Pl. 10, fig. 310 ; Map 5)

DESCRIPTION. ♂, ♀. Head and palps greyish brown. Antenna pale brownish buff ; unilamellate.

Coloration of thorax doubtful, but probably similar to ground-colour of wings. Fore legs with very pale brown rear surface and greyish brown front surface ; colour of remaining legs not known. Outer margin and costa of fore wings strongly arcuate (Plate 10, fig. 310) ; venation as for *fenestra* (Text-fig. 153). Ground-colour of fore wing pale reddish brown, lightly speckled with dark brown ; oblique brown postmedial fascia edged distally with pale brown ; three circular, hyaline patches at end of cell, smallest spot between  $M_2$  and  $M_3$ , a large spot between  $M_3$  and  $Cu_{1a}$ , and largest spot between  $Cu_{1a}$  and  $Cu_{1b}$ . Upper surface hind wing darker than fore wing, similarly speckled with dark brown ; antemedial fascia brown, edged distally with pale brown ; large orange-brown spot at posterior angle of cell. Under surface of fore wing very pale brown lightly speckled with brown ; hind wing paler than fore wing, similarly speckled with brown ; greyish brown spot at end of cell corresponding in position with orange-brown spot on upper surface.

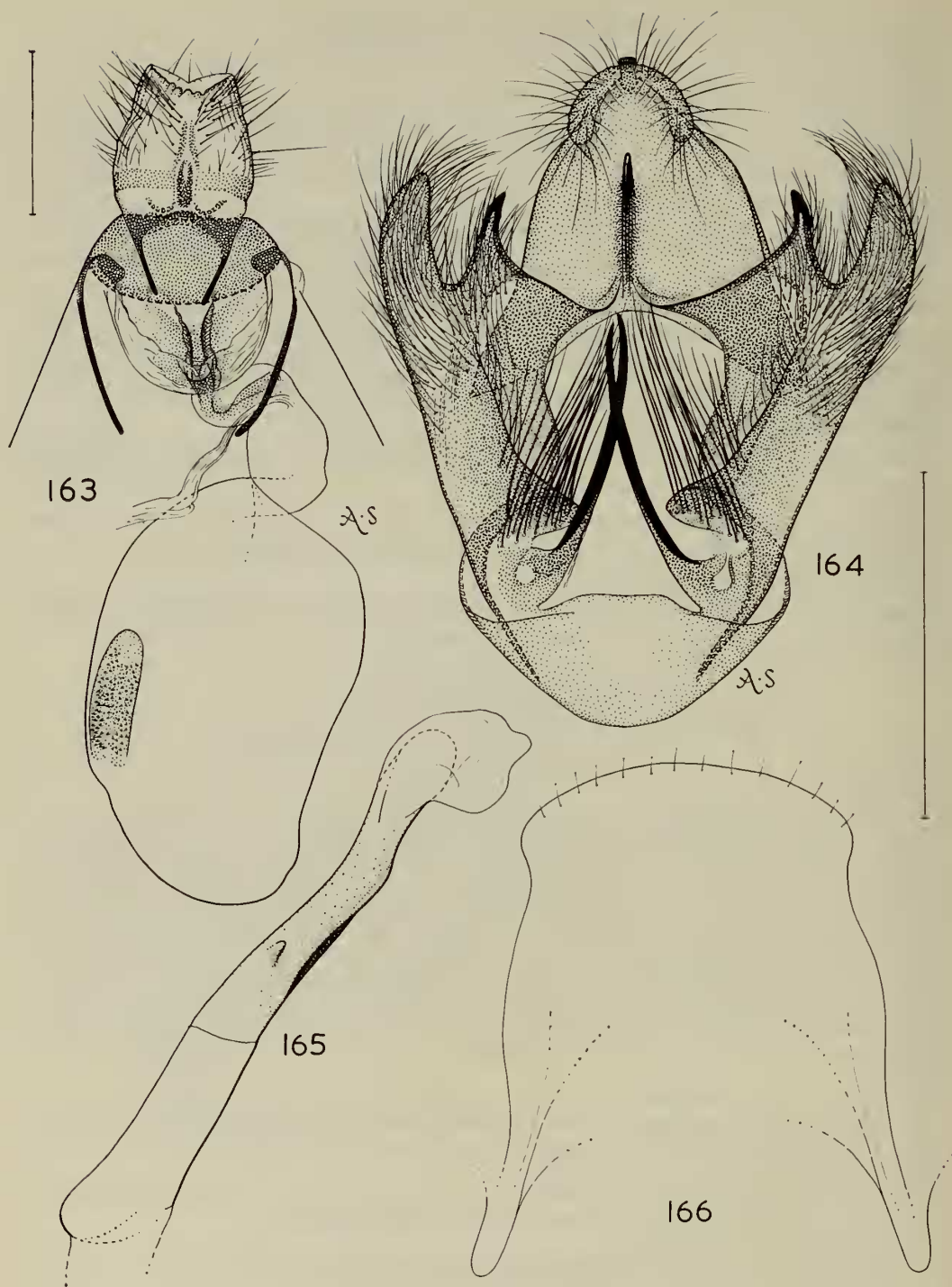
Colour of abdomen not known.

♂ GENITALIA as in Text-figs. 164-166. Strongly sclerotized process near base of valves, apparently arising from vinculum ; aedeagus carinate on one side, with short lobe ; posterior margin of eighth abdominal sternite entire.

♀. Similar to male, but with more slender antennae, upper surface of wing more reddish, both surfaces more strongly speckled and fore wing more distinctly falcate.

♀ GENITALIA as in Text-fig. 163.

MEASUREMENTS. A.P.R. : (antennae broken but probably about ♂. 4, ♀. 2). Wing : ♂. 13.0, 13.0-14.0 mm. (3) ; ♀. 17.0 mm. (1).



FIGS. 163-166, *Spidia rufinota*, genitalia. 163, ♀; 164, ♂; 165, aedeagus; 166, ♂ eighth abdominal sternite.

DISCUSSION. Close similarities in the male genitalia suggest that this species is most closely related to *fenestrata* and *goniata* although it is readily separable from them by the shape of the fore wing, the presence of a large orange-brown spot on the hind wing and by the lamellate antennae.

DISTRIBUTION (Map 5). Known only from CAMEROUN and the CENTRAL AFRICAN REPUBLIC.

MATERIAL EXAMINED. Type. Holotype ♂, CAMEROUN, Bitje, Ja River, 2,000 ft. (Bates); Drepanidae genitalia slide No. 1187; in the British Museum (Natural History).

Paratypes. *British Museum (Natural History)*. CAMEROUN: 1 ♂, 1 ♀, type locality, x-xi.1912, 1915. *Institut d'Enseignement et de Recherches tropicales, Bondy*. CENTRAL AFRICAN REPUBLIC: 1 ♂, M'baiki, Boukoko, 23.vi.1949 (*Réal*).

### *Spidia inangulata* sp. n.

(Text-figs. 167-171; Pl. 9, fig. 306; Map 5)

DESCRIPTION. ♂. Head brown anterior to antennal bases, buff posteriorly. Palp brown on upper and outer surface; remainder buff. Antenna unipectinate; upper surface buff.

Thorax pinkish buff dorsally; ventral surface pale buff, but darker around eyes. Outer surface of femur, tibia and proximal part of tarsus of fore leg orange-scarlet, but with medial part of tibia orange. Shape of wings as in Plate 9, fig. 306; venation as for *fenestrata* Butler (Text-fig. 153). Ground-colour of upper surface of fore wing buff (holotype), reddish buff or grey; lightly speckled with dark brown especially in costal area, at apex and near tornus; medial shade usually present, reddish buff (holotype), brown or grey; brown oblique postmedial fascia, well marked and reddish brown in holotype, poorly defined in half of examples examined, trace of broad dentate subterminal fascia. Hyaline patches greenish, iridescent; similarly coloured discocellular spot, spot in middle of cell and dark spot just distal to anterior angle of cell (confluent with spot at posterior angle of cell in some specimens, not holotype). One specimen examined (not holotype) with two small hyaline spots instead of one large patch between  $Cu_{1a}$  and  $Cu_{1b}$ . Upper surface of hind wing often (including holotype) slightly darker than fore wing; varying shades of brown, reddish brown (holotype) or greyish brown, lightly speckled with darker brown (holotype) or greyish brown, lightly speckled with darker brown especially at outer angle. Very dark brown discocellular spot and larger spot at posterior angle of cell; broad antemedial fascia continuous with, and same colour as, postmedial fascia of fore wing. Under surface of both wings pale pinkish buff, speckled with very dark brownish grey; fore wing with dark discocellular spot, mid-cell spot, and dark-edged hyaline patches; hind wing with large, very dark, brownish grey, discocellular spot and trace of posterior cell-spot.

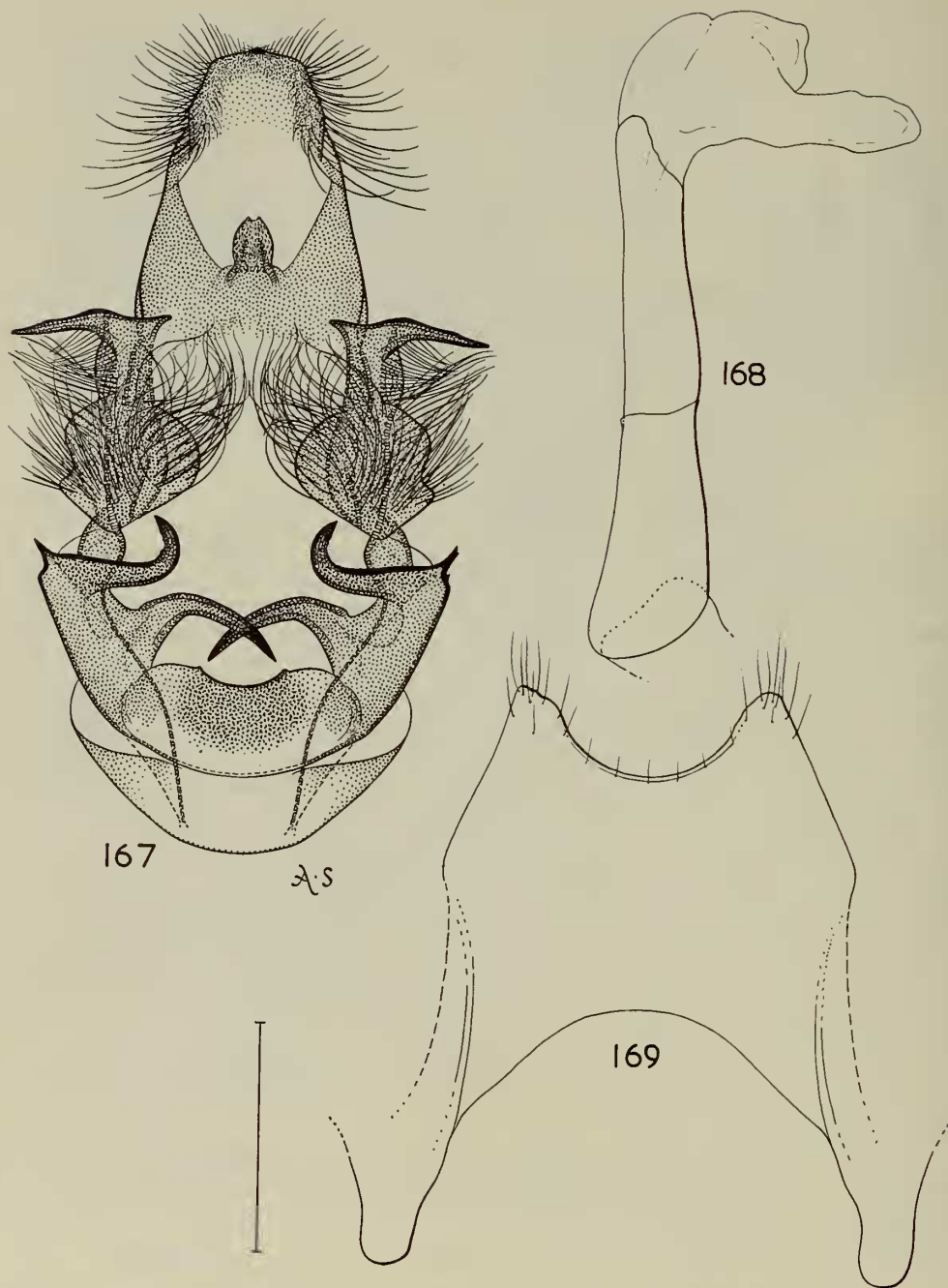
♂ GENITALIA as in Text-figs. 167-169. Vincular and valve processes bifurcate, medial part of gnathus and juxta all particularly heavily sclerotized. Vincular processes not identically paired. Base of aedeagus broad, truncate.

♀. Similar to male but with shorter antennal pectinations and more strongly produced fore wing apex. Wings of all examined specimens with pale grey or greyish buff ground-colour on upper surface and paler, but pinkish, under surface.

♀ GENITALIA as in Text-figs. 170-171.

MEASUREMENTS. A.P.R.: ♂. 7; ♀. 4. Wing: ♂. 22.0, 20.0-23.0 mm. (15); ♀. 24.0, 23.5-25.0 mm. (3).

DISCUSSION. This species is very closely related to *smithi* Warren, but the differently shaped hind wing makes separation of the two species a simple matter.

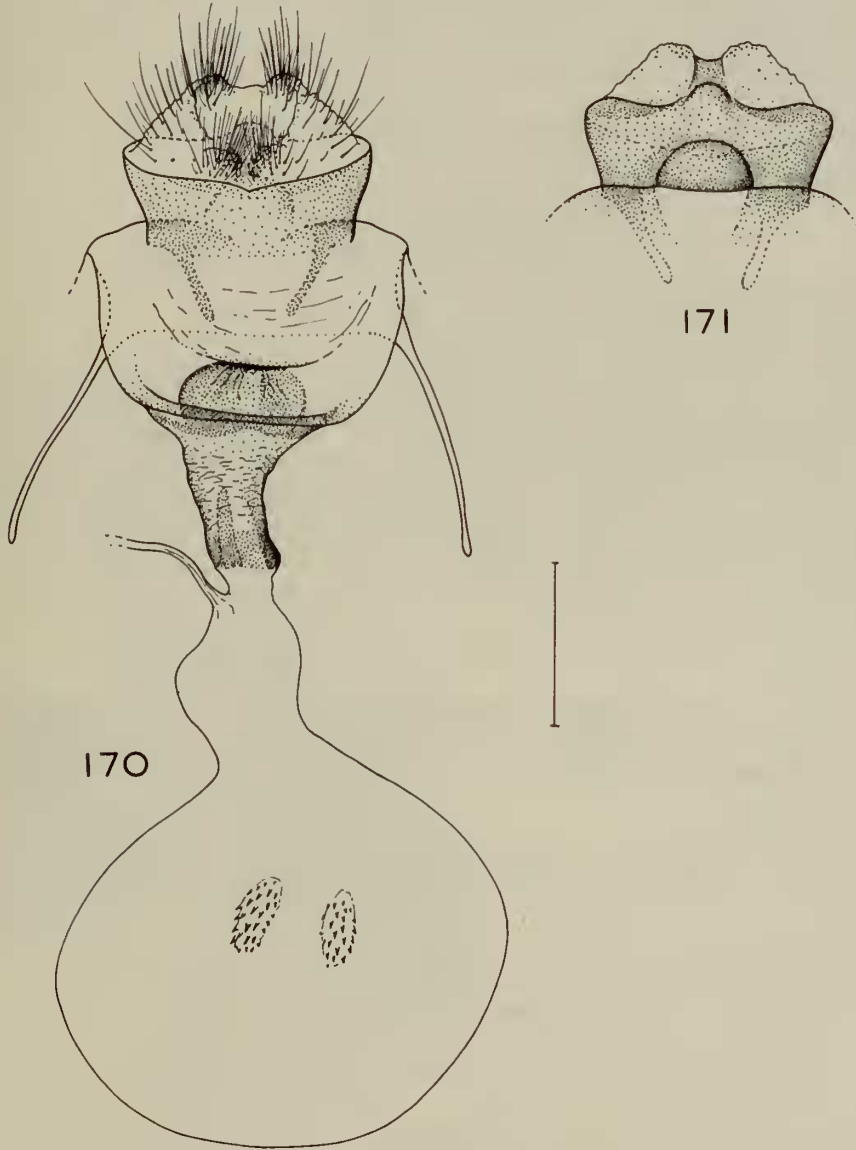


FIGS. 167-169, *Spidia inangulata*, ♂ genitalia. 167, ♂ ; 168, aedeagus ; 169, eighth abdominal sternite.



The only other species likely to be confused with *inangulata* are *fenestrata* and *goniata*, in both of which, however, the outer margin of the fore wing is less strongly arcuate and there are no hyaline patches posterior to  $Cu_{1b}$ .

The high degree of individual variation in the coloration of the upper surface of the wings has been dealt with in the description. The iridescent green markings on the fore wings of some specimens are particularly striking.



FIGS. 170-171, *Spidia inangulata*, ♀ genitalia. 170, ventral view ; 171, dorsal view of terminal part.



**DISTRIBUTION** (Map 5). With the exception of one Nigerian specimen the species is known only from CAMEROUN. The Nigerian male probably represents a new subspecies, but further material is needed before this can be verified.

**MATERIAL EXAMINED.** Type. Holotype ♂, CAMEROUN, Bitje, Ja River, 2,000 ft., x. (Bates) ; Drepanidae genitalia slide No. 1178 ; in the British Museum (Natural History).

Paratypes. *British Museum (Natural History)*. CAMEROUN : 15 ♂, 3 ♀, Bitje, Ja River, 2,000 ft., 4.v.—6.vii.1909, iv—xi.1910, x—xi.1913 (Bates). *Carnegie Museum, Pittsburgh*. CAMEROUN : 2 ♂, 1 ♀, Efulen, 10.xi.1911, 12.v., 1.xii.1913 (Weber).

Other material. *British Museum (Natural History)*. NIGERIA : 1 ♂, Port Harcourt, light, 27.xi.1957 (MacNulty).

***Spidia smithi* (Warren) comb. n.**

(Text-figs. 172–175 ; Pl. 9, fig. 305 ; Map 5)

*Phalacrothyris smithi* Warren, 1902 : 488.

*Phalacrothyris smithi* Warren ; Gaede in Seitz, 1927 b : 292.

*Phalacrothyris smithi* Warren ; Gaede, 1931 : 52.

**DIAGNOSIS.** ♂, ♀. This species is probably most closely related to *inangulata* from which it can be separated by the angulate outer margin of the hind wing (Plate 9, fig. 305), the more strongly arcuate outer margin and more strongly produced apex of the fore wing, by small but easily recognizable differences in the male genitalia (eighth abdominal sternum, saccus, uncus, gnathus, valves, vincular processes, base of aedeagus), and by the differently shaped female genitalia (Text-figs. ♂ 172–174, ♀ 175). The oblique postmedial fascia on the upper surface of the fore wing is poorly defined in all the specimens examined, whereas about half of the available specimens of *inangulata* have a strongly marked fasciae. The greater size, the absence of dark costal markings in the costal area, and the genitalia distinguish *smithi* from *excentrica*, *planola* and *subviridis*.

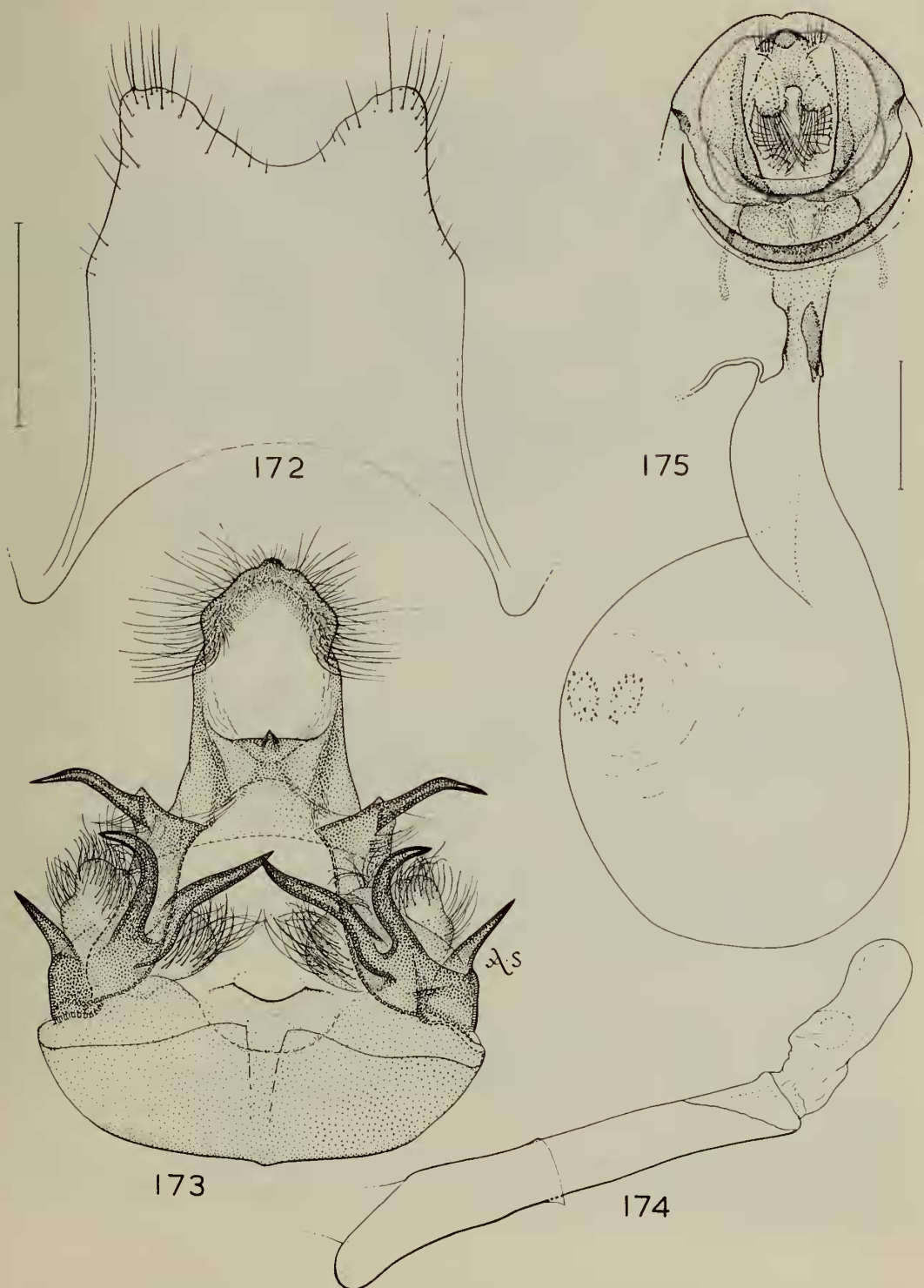
**MEASUREMENTS.** A.P.R. : ♂. 6 ; ♀. 4. Wing : ♂. 22.5, 21.5–23.0 mm. (6) ; ♀. 24.0, 23.0–25.0 mm. (7).

**DISCUSSION.** The individual variation in the coloration of the upper surface is similar to that found in *inangulata*. Two of the most interesting colour-forms are a reddish brown male from Sankuru (Congo) and a slightly reddish, dark grey female from Uele (Congo).

**DISTRIBUTION** (Map 5). Known from the CONGO and UGANDA. The single specimen listed below from Uganda doubtless represents a new subspecies, but further material is needed before it can be satisfactorily characterized and described.

**MATERIAL EXAMINED.** Type. Holotype ♀, U. CONGO, Yakusu (*Smith*) ; Drepanidae genitalia slide No. 1185 ; in the British Museum (Natural History).

Other material. *British Museum (Natural History)*. CONGO : 1 ♀, Bopoto (*Smith*) ; UGANDA : Masaka (*Edwards*). *Musée Royal de l'Afrique centrale, Tervuren* CONGO : 1 ♂, 1 ♀, Uele, Paulis, 7.ix.1956, 7.ix.1957 (*Fontaine*) ; 2 ♂, Bokuma, ii.1936, 11.ii.1952 (*Hulstaert, Lootens*) ; 1 ♂, 1 ♀, Flandria, i.1934, 31.x.1946 (*Hulstaert*) ; 1 ♂, 2 ♀, Sankuru, Katako, Kombe, 21.viii–16.xii.1952 (*Fontaine*) ; 1 ♀, Sankuru, Djeka-Mbudi, 13.ix.1952 (*Fontaine*) ; 1 ♂ (*Hulstaert*) ; 1 ♀, Lusambo, 9.xi.1950 (*Fontaine*). *Naturhistoriska Riksmuseet, Stockholm*. CONGO : 1 ♂.



FIGS. 172-175, *Spidia smithi*, genitalia. 172, ♂ eighth abdominal sternite; 173, ♂; 174, aedeagus; 175, ♀.

*Spidia planola* sp. n.

(Text-figs. 178, 179 ; Map 5)

DESCRIPTION. ♂. (Based on a single specimen from the Ivory Coast.) Outer surface of palp brownish buff. Front of head dark greyish brown, vertex pale buff. Antenna buff.

Dorsal surface of thorax buff, ventral surface pale buff. Outer surface of all legs greyish brown, inner surface pale buff ; fore legs darker on outer surface than remaining legs. Wing shape as in Plate 10, fig. 309 of *excentrica* ; hind wing angulate at  $M_1$ . Venation as for *fenestrata*. Ground-colour of both wings buff, lightly speckled with dark brown. Upper surface of fore wing with two dark grey costal markings ; dark reddish brown discocellular spot and similarly coloured spots at posterior and anterior angles of cell ; dark reddish brown streak extending from anterior angle of cell to about half-way along posterior margin of areole ; second dark reddish brown streak extending from discocellular spot along middle of cell to base of wing ; six greenish, iridescent patches in end of cell, distal to end of cell, between  $M_2$  and  $M_3$ , between  $M_3$  and  $Cu_{1a}$  between  $Cu_{1a}$  and  $Cu_{1b}$ , and between  $Cu_{1b}$  and  $1A$  ( $Cu_{1a}$ — $Cu_{1b}$  patch large, about 1 mm. in diameter ; remainder about half this size) ; faintly marked oblique postmedial fascia from near apex to about half length of inner margin ; trace of dark subterminal markings near tornus. Upper surface of hind wing with broad, weakly marked, reddish buff, antemedial fascia continuous with postmedial fascia of upper surface ; dark reddish brown discocellular spot and spot at posterior angle of cell ; small hyaline patch between  $M_3$  and  $Cu_{1a}$  close to end of cell ; reddish grey postmedial shade in posterior half of wing ; subterminal area of wing more reddish than remainder of wing. Under surface of both wings very pale grey, lightly striate with dark brownish grey wing ; slightly darker in middle of proximal half of wing and with trace of postmedial fascia (not corresponding in position with postmedial fascia on upper surface) ; hind wing with faintly marked postmedial fascia.

♂ GENITALIA as in Text-figs. 178, 179 (Ivory Coast ♂). Eighth abdominal sternite similar to that of *excentrica* (Text-fig. 183) ; valve with elongate, non-setose arm, and setose, digitate process ; vinculum with two pairs of arcuate, heavily sclerotized arms ; aedeagus with lateral lobe.

♀ (Ivory Coast specimen in the British Museum). Similar to male, but lacks reddish brown streak in cell and along areole, there are relatively larger hyaline patches in fore wing, and a hyaline patch between  $M_2$  and  $M_3$  as well as between  $M_3$  and  $Cu_{1a}$ .

♀ GENITALIA similar to those of *subviridis* but more material is needed for comparison.

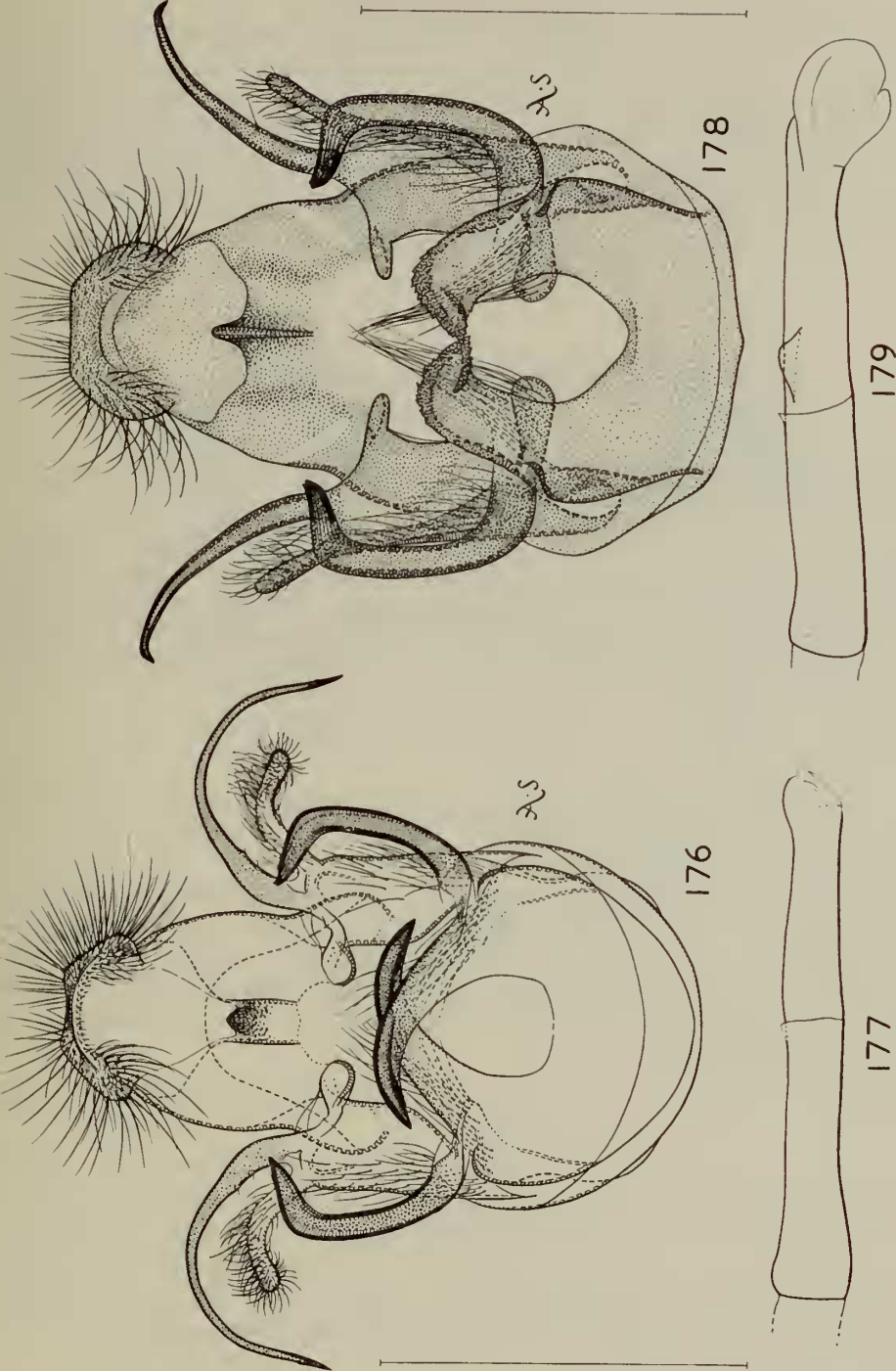
MEASUREMENTS. A.P.R. : ♂. 11 ; ♀. Not known (antennae broken). Wing : ♂. 15.0 mm. (1) ; ♀. 16.0, 15–17.0 mm. (2).

DISCUSSION. This species is probably most closely related to *subviridis*, from which it can be separated, in most specimens, by the less acutely produced outer margin of the hind wing (as in *excentrica* Plate 9, fig. 308) and by the spinose, stouter, innermost vincular processes and the shape of the uncus and gnathus (Text-fig. 178). The species *planola* and *subviridis* apparently form a species-pair in the Ivory Coast.

DISTRIBUTION (Map 5). IVORY COAST ; probably SIERRA LEONE ; possibly GHANA and the CENTRAL AFRICAN REPUBLIC.

MATERIAL EXAMINED. Type. Holotype ♂. IVORY COAST, Bingerville, ix.1915 (*Mélou*) ; Drepanidae genitalia slide No. 1162 ; in the British Museum (Natural History).

Paratypes. *British Museum (Natural History)*. IVORY COAST : 1 ♀. *Institut d'Enseignement et de Recherches tropicales, Bondy*. IVORY COAST : 1 ♀, Adiopodoumé 17.i.1955 (*Réal*).



FIGS. 176-179, *Spidia*, ♂ genitalia. 176-177, *subviridis*. 176, ♂; 177, aedeagus. 178-179, *planola*. 178, ♂; 179, aedeagus.



Other material. Apart from the specimens collected in the Ivory Coast, several specimens from Sierra Leone doubtless belong to this species, but may represent a new subspecies. The latter examples have not been referred to in the description or labelled as paratypes as more material of both sexes is required before their specific identity can be definitely resolved. There is considerably more doubt about the position of two specimens (Central African Republic and Ghana) which either represent a new subspecies of *planola* or a new species of *Spidia* close to *planola*.

***Spidia subviridis* (Warren) comb. n.**

(Text-figs. 176, 177, 181 ; Pl. 9, fig. 307 ; Map 5)

*Phalacrothyris subviridis* Warren, 1899 : 287.

*Phalacrothyris subviridis* Warren ; Gaede in Seitz, 1927 b : 292.

*Phalacrothyris subviridis* Warren ; Gaede, 1931 : 52.

DIAGNOSIS. ♂, ♀. Similar to *planola* and *excentrica* in coloration and colour-pattern, but most specimens can be readily distinguished from both of the latter species by the more acutely produced outer margin of the hind wing (Plate 9, fig. 307). The male genitalia have many characters in common with those of *planola* but differ in the shape of the uncus, gnathus, and the more medial of the two pairs of vincular arms which are evenly tapered and non-spinose (Text-fig. 176). In the female genitalia (Text-fig. 181) the shape of the post-ostial structures separates *subviridis* from *excentrica*.

MEASUREMENTS. A.P.R. : ♂. 14 ; ♀. Not known (antennae broken). Wing : ♂. 13.0, 11.0-14.5 mm. (6) ; ♀. 16.0, 15.5-16.5 mm. (3).

DISCUSSION. The close similarity in the genitalia between *planola* and *subviridis* suggests a probable monophyletic origin. They form a species-pair in the Ivory Coast where they are apparently sympatric.

There is considerable variation in the coloration of the upper surface of the wings which may be one of many tones of grey or buff variously speckled with brown. The fore wings of one male from Cameroun have dark brown streaks in the cell and beneath the areole as in the holotype of *planola*. The size and number of the hyaline patches in both wings are also subject to much variation : in some specimens they are absent in the hind wing.

DISTRIBUTION (Map 5). Known from the IVORY COAST, NIGERIA, CAMEROUN and the CONGO.

MATERIAL EXAMINED. Type. Holotype ♀, NIGERIA, Warri, vii.97 (Roth) ; Drepanidae genitalia slide No. 1164 ; in the British Museum (Natural History).

Other material. *British Museum (Natural History)*. CAMEROUN : 4 ♂, 3 ♀, Bitje, Ja River, 2,000 ft., iv-vi.1910, x-xi.1912, x-xi.1913 (Bates). *Institut d'Enseignement et de Recherches tropicales, Bondy*. IVORY COAST : 1 ♂, Adiopodoumé, 16.i.1955 (Réal). *Musée Royal de l'Afrique centrale, Tervuren*. CONGO : 1 ♂, Flandria, 29.x.1929 (Hulstaert).

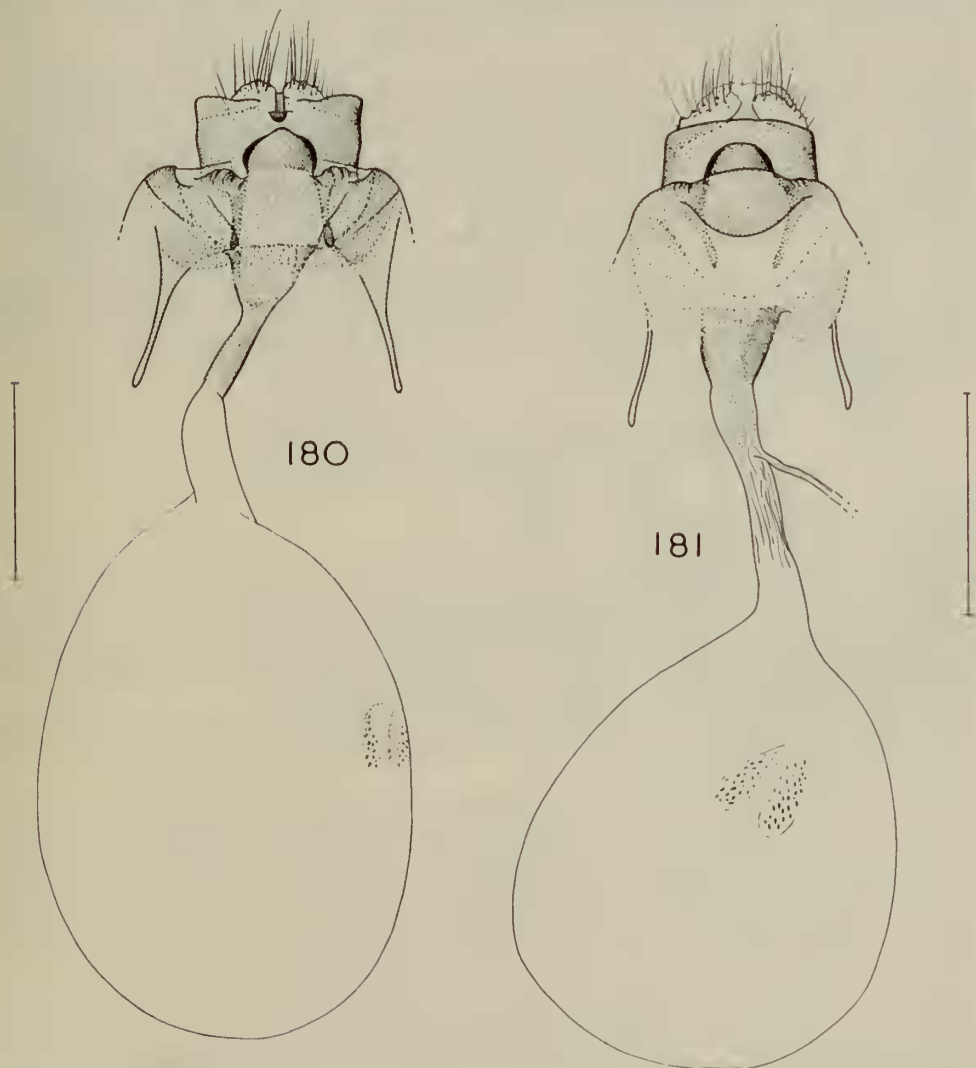


***Spidia excentrica* Strand**

(Text-figs. 180, 182-184 ; Pl. 9, fig. 308, Pl. 10, fig. 309 ; Map 5)

*Spidia excentrica* Strand, 1912 : 122.*Spidia excentrica* Strand ; Gaede, 1931 : 51.*Phalacrothyris excentrica* (Strand) ; Gaede in Seitz, 1927 b : 292. [Very poor fig.]*Phalacrothyris excentrica* (Strand) ; Gaede, 1931 : 52.*Phalacrothyris excentrica* (Strand) ; Watson, 1957 : 113.

DIAGNOSIS ♂, ♀. Similar to *subviridis* in the coloration and the variation in the number and size of the hyaline patches on the wings ; but separable from it externally by the shape of the hind wing (Plate 9, fig. 308) (similar to that of *planola* and *miserrima*) and in the male and

FIGS. 180-181, *Spidia*, ♀ genitalia. 180, *excentrica* ; 181, *subviridis*.

female genitalia by distinct differences (Text-figs. 180, 182-184). The male possesses a third pair of vincular processes not found in either *subviridis* or *planola*.

MEASUREMENTS. A.P.R. : ♂. 15 ; ♀. 9. Wing : ♂. 12.5, 12.0-13.0 mm. (3) ; ♀. 16.5, 15.5-18.5 mm. (5).

DISCUSSION. There are close affinities between this species and *subviridis* and *planola*, but these are not as close as those between the latter two species.

The extent of individual variation in coloration and colour-pattern is similar to that described for *subviridis*. One of the more interesting forms is represented by a male from Nigeria in which there is a dark brown streak in the cell and another below the areole as in the holotype of *planola*.

Gaede (1931 : 51, 52) catalogued this species under both *Spidia* and *Phalacrothyris* in the same publication.

DISTRIBUTION (Map 5). NIGERIA and CAMEROUN. A male from GABON and a female from FERNANDO PO, both in the British Museum (Natural History), probably belong to this species, but further material is needed before this can be confirmed.

MATERIAL EXAMINED. Type. Holotype ♀, CAMEROUN, Buea ; Drepanidae genitalia slide No. 1243 ; in the Zoologisches Museum, Berlin.

Other material. *British Museum (Natural History)*. CAMEROUN ; 2 ♀, Bitje, Ja River, x.1915 (*Bates*). NIGERIA : 1 ♀,  $\frac{1}{2}$  mile E. of Oni, bred from larva, emerged 20.ix.1912, larva collected 15.iii-8.xii (*Lambourn*) ; 2 ♂, 1 ♀,  $\frac{1}{2}$  mile E. of Oni, 8.xii.1911, 23.iii.1912 (*Lambourn*).

### *Spidia miserrima* (Holland) **comb. n.**

(Text-figs. 185-187 ; Map 5)

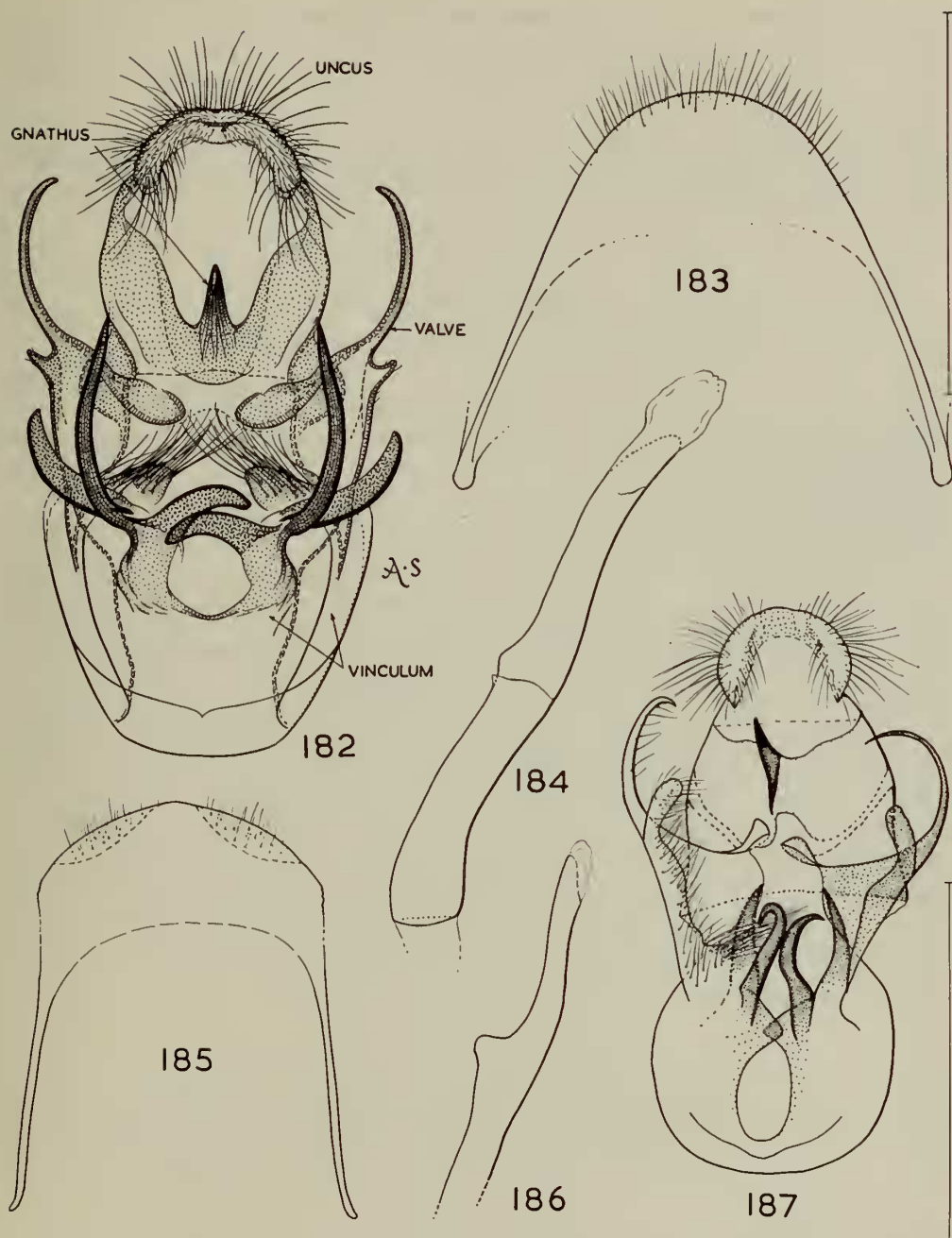
*Thymistida miserrima* Holland, 1893 : 181.

*Epicamptoptera miserrima* (Holland) ; Gaede, 1931 : 52.

DIAGNOSIS. ♂. Shape and colour-pattern of wings probably similar to *excentrica* and *planola* (see Discussion). ♂ genitalia (Text-figs. 185-187) : vinculum with two pairs of long, heavily sclerotized processes ; medial process of vinculum long and acuminate ; aedeagus with conspicuous lateral lobe ; eighth tergite as in *excentrica* ; (eighth sternite probably accidentally folded at its posterior margin on holotype slide, as in Text-fig. 185).

MEASUREMENTS. A.P.R. : Not known. Wing : ♂. Given as "25 mm." in the original description. It is obvious from the illustrations given by Holland that this measurement is the distance between fore wing apices.

DISCUSSION. Owing to the variability in the coloration and in the size and number of the hyaline patches on the wings it is doubtful whether an examination of the holotype, the only known specimen, would have revealed any significant external difference between *miserrima* and the similarly patterned *excentrica* or *planola*. The genitalia slide of the holotype has, however, been examined and compared with slides of *excentrica* with which *miserrima* has close affinities. The differently shaped vincular processes in the male genitalia (probably slightly displaced in the type-slide of *miserrima* and consequently in Text-fig. 187), the differently shaped valve, and the large lateral lobe on the aedeagus distinguish *miserrima* from *excentrica*.



FIGS. 182-187, *Spidia*, ♂ genitalia. 182-184, *excentrica*. 182, ♂; 183, eighth abdominal sternite; 184, aedeagus. 185-187, *miserrima*. 185, eighth abdominal sternite; 186, aedeagus (base missing); 187, ♂.

This species was not correctly placed in either *Thymistida* Warren, which is a genus of a different subfamily (Drepaninae), or in *Epicampoptera*, all the species of which have differently shaped wings, a different colour-pattern and distinctive male genitalia.

MATERIAL EXAMINED. Type. Holotype ♂, GABON, Valley of the Ogowe [Ogové] River ; slide preparation No. C566 ; in the Carnegie Museum, Pittsburgh.

### *CROCINIS* Butler

(Text-figs. 188–218 ; Pls. 11–13, figs. 313–325)

*Crocinis* Butler, 1879 : 244. Type-species, by original designation, *Crocinis fenestrata* Butler, 1879.

*Drapena* Gaede, in Seitz, 1927 b : 289. Type-species, by original designation, *Drepana forata* Warren, 1897. **syn. n.**

*Drapena* Gaede ; Gaede, 1931 : 51.

DESCRIPTION. ♂. Proboscis vestigial. Palp small, extending to just above labrum. Antennae unipectinate.

Thorax yellow, orange, brown or black. Mid and hind tibia each with one pair of apical spurs. Costa of fore wing weakly arcuate except at base and apex ; apex weakly or strongly falcate,  $R_1$  arises from short distance proximal to end of cell ;  $R_2$  from short distance proximal to end of elongate areole.  $R_4$  fuses with  $R_3$  for short distance immediately after branching from  $R_{4+5}$ . Fore wing yellow, orange, brown or grey, usually speckled with dark brown or black and with semi-transparent patch or patches at end of cell ; antemedial fascia usually weakly marked ; discocellular spot and posterior cell-spot usually well marked in species-group *spicata*, usually absent in species-group *fenestrata* ; oblique postmedial fascia usually well-marked. Hind wing with posterior part of outer margin slightly convex in species-group *fenestrata* (except in *felina*), straight or slightly convex in species-group *spicata*.  $Sc + R_1$  anastomoses with  $R_s$  for short distance distal to end of cell. Colour of hind wing usually similar to fore wing ; double antemedial fascia usually present ; cell-spots present or absent. Under side of both wings, yellow, reddish yellow or light brown ; cell-spots corresponding with spots on upper surface ; post-medial fascia usually well marked on fore wing, absent or poorly marked in hind wing, corresponding in position with same fascia in fore wing but not in hind wing. (See Plates 11–13.)

Coloration of abdomen as for corresponding adjacent surface of hind wing.

♂ GENITALIA. (Species-group *fenestrata*, see labelled Text-fig. 188) : saccus broad, shallow ; valve (or derivatives of vinculum) elongate, digitate, with one or more stout processes at base, and long incurved process arising posteriorly ; tegumen with pair of minute, lateral, setose lobes ; uncus simple, tapered ; diaphragma weakly sclerotized medially ; anellus conical ; aedeagus with variously shaped cornutus or cornuti ; eighth abdominal sternum with one pair of posterior processes, without apodemes. (Species-group *spicata*, see labelled Text-fig. 216) : saccus as above ; valve with four processes, two heavily sclerotized, two weakly sclerotized and digitate ; diaphragma forming a large, weakly sclerotized, anteriorly directed invagination ; anellus a broad, moderately well sclerotized, domed structure surrounding the aedeagus ; tegumen with paired setose lobes ; uncus hood-like, bilobed ; aedeagus large, bilobed at base, vesica partially scobinate but without cornuti ; eighth sternum with bilobed posterior margin, unmodified and without apodemes anteriorly.

♀. (*boboa* is the only species whose females have been definitely identified.) Probably basically similar to male in all species. In *boboa* the antennal pectinations are relatively shorter and the outer margin of hind wing is entirely convex.



♀ GENITALIA : In *boboa* (species-group *fenestrata*) the bursa is ornamented with an irregular band of scobinations ; in unidentified females of species-group *spicata* the bursa bears a T-shaped signum.

DISCUSSION. *Crocinis* was erected for three new species : *fenestrata* (selected as type-species by Butler) *plana*, and *ochracea*. [The latter two species have been transferred to the family Geometridae by previous authors.] *Drapena* was established by Gaede (1927 b : 189) for *Drapena forata* Warren (selected as type-species by Gaede) and *Drepana tetrathyra* Mabille. Examination of the holotypes of *fenestrata* and *forata* has shown them to be conspecific and that *Drapena*, 1927, must be treated as a junior synonym of *Crocinis*, 1879. In this revision eight new Madagascan species are added to the genus *Crocinis*, and *tetrathyra* Mabille is transferred to this genus from *Gogana* Walker (an Indo-australian genus which bears little resemblance to *Crocinis*).

This Madagascan genus is probably most closely related to the African *Spidia* Butler, from which it may have been derived, but can be separated from it in the male genitalia by differences in the form of the valves (or vincular processes) and saccus, the absence of a gnathus, and the presence of a well-developed anellus and an only slightly modified eighth abdominal sternum. The female signum is probably also diagnostic, but the females of only one species of *Crocinis* have been definitely identified.

The species *spicata* and *licina* are apparently identical externally but are separated by small differences in parts of the male genitalia. They are sympatric, however, in the forest of Anamalazoa, near Périnet, and are therefore probably distinct species, not subspecies of one species.

Considerable individual variation in coloration and in the size and shape of the hyaline patches is present in *spicata* and *viettei*. Similar variation may exist in the remaining species of this genus but there is insufficient material to show this.

Several females of the species-group *spicata* in the Muséum national d'Histoire naturelle, Paris, the Institut scientifique, Madagascar, and the British Museum (Natural History) can not, at present, be associated with the corresponding males. One of these females is illustrated (Plate 13, fig. 325).

The species of *Crocinis* can be readily separated into two groups which are diagnosed below. I have termed them species-group *fenestrata* and species-group *spicata*.

#### SPECIES-GROUP *fenestrata*

Outer margin of hind wing concave posteriorly (except *felina*) ; cell-spots on both surfaces of fore and hind wing absent or weakly marked. ♂ GENITALIA : posterior digitate process of valve (or derivative of vinculum) without sclerotized spine ; diaphragma without invagination ; uncus simple, not bilobed at base ; vesica of aedeagus with cornutus or cornuti.

#### SPECIES-GROUP *spicata*

Outer margin of hind wing straight or slightly convex posteriorly ; cell-spots usually well marked. ♂ GENITALIA : posterior digitate process of valve with sclerotized spine ; diaphragma with anteriorly directed invagination medially ; uncus hood-like, bilobed at base ; vesica scobinate but without cornuti.



## KEY TO SPECIES

## MALES

A : SPECIES-GROUP *fenestrata*

- 1 Apex of fore wing strongly produced ; outer margin of hind wing entirely convex (Plate 11, fig. 316) ; valve with single, basal tooth ; aedeagus with single, thorn-like cornutus ; eighth sternum as in Text-fig. 208 . . . . . ***felina*** (p. 126)
- Apex of wing less strongly produced than in Plate 11, fig. 316 ; outer margin of hind wing straight or slightly concave posteriorly ; genitalia with one or two processes at base of valve . . . . . 2
- 2 Hyaline patch on fore wing more than half width of wing (measured at point mid-way between base and apex) ; postmedial fascia of fore wing weakly marked (Plate 12, fig. 320) ; valve with two processes near base (Text-fig. 199) ; vesica of aedeagus scobinate, with single cornutus ; eighth sternum as in Text-fig. 198 . . . . . ***boboa*** (p. 121)
- Hyaline patch on fore wing less than half width of wing at middle ; postmedial fascia usually well-marked on fore wing ; valve with one or two basal processes . . . . . 3
- 3 Upper surface of fore wing lustrous distal to postmedial fascia . . . . . 4
- Upper surface of fore wing non-lustrous distal to postmedial fascia . . . . . 5
- 4 Fore wing with hyaline patch ; outer margin of hind wing concave posteriorly (Plate 11, fig. 314) ; valve with single basal process (Text-fig. 204) ; eighth sternum as in Text-fig. 205 . . . . . ***imaitsoana*** (p. 124)
- Fore wing without hyaline patch ; outer margin of hind wing straight or very weakly concave posteriorly (Plate 11, fig. 313) ; valve with two processes (Text-fig. 201) ; eighth sternum as in Text-fig. 202 . . . . . ***canescens*** (p. 126)
- 5 Postmedial fascia of upper surface of fore wing with distal border of highly lustrous scales ; valves with two basal processes . . . . . 6
- Postmedial fascia of upper surface without highly lustrous scales (Plate 11, fig. 315) ; valve with single basal process (Text-fig. 188) . . . . . ***fenestrata*** (p. 116)
- 6 Valve processes as in Text-fig. 194 ; vesica of aedeagus scobinate, with two cornuti (Text-fig. 196) . . . . . ***viettei*** (p. 119)
- Valve processes as in Text-fig. 193 ; vesica of aedeagus not scobinate, with single cornutus (Text-fig. 192) . . . . . ***prolixa*** (p. 117)

B : SPECIES-GROUP *spicata*

- 1 A.P.R. 15 ; genitalia as in Text-figs. 216–218 . . . . . ***tetrathyra*** (p. 131)
- A.P.R. 12 ; genitalia as in Text-figs. 210–215 . . . . . 2
- 2 Genitalia as in Text-figs. 210–212 . . . . . ***spicata*** (p. 127)
- Genitalia as in Text-figs. 213–215 . . . . . ***licina*** (p. 129)

SPECIES-GROUP *fenestrata****Crocini fenestrata*** Butler

(Text-figs. 188–190 ; Pl. 11, fig. 315)

*Crocini fenestrata* Butler, 1879 : 244.*Drepana forata* Warren, 1897 : 15. **syn. n.***Drapena forata* (Warren) ; Gaede, 1927 b : 289.*Drapena forata* (Warren) ; Gaede, 1931 : 51.

DESCRIPTION. ♂. Head, palps, antennae, thorax, legs and ground-colour of wings yellowish orange.

Fore wing weakly falcate (Plate 11, fig. 315) ; outer margin moderately convex. Small group of semi-transparent patches surrounding posterior angle of cell ; largest patch between  $Cu_{1a}$  and  $Cu_{1b}$ . Upperside of fore wing with trace of antemedial fascia ; reddish brown postmedial fascia from near apex to three-fifths anal margin, bent inwards just before costa, edged distally with lustrous, white scales ; apex and area between postmedial and outer margin brownish orange. Hind wing with moderately convex outer margin anteriorly but slightly concave from  $Cu_1$  to tornus ; trace of double antemedial fascia, continuous with postmedial fascia of fore wing ; distal part of wing lightly speckled with reddish brown. Underside of both wings deep yellow. Fore wing with trace of anterior part of postmedial ; apex of wing and anterior part of area between postmedial and margin brownish orange. Hind wing lightly and irregularly speckled with reddish brown anterodistally ; small dark discocellular spot.

Colour of abdomen doubtful (specimens worn).

♂ GENITALIA (Text-figs. 188–190) : valve with single, sharply pointed, inwardly-directed process near base ; aedeagus with single cornutus ; eighth abdominal sternum as in figure.

♀. Unknown.

MEASUREMENTS. A.P.R. : ♂. Not known (no complete antenna). Wing : ♂. 12.5 mm. (2).

DISCUSSION. The yellow coloration of the upper surface and the presence of only one spine at the base of each valve in the genitalia separate this species from *prolixa* and *viettei* both of which are similar in size to *fenestrata*. It is doubtful, however, if the relationship between *fenestrata* and the two above-mentioned species is any closer than that between *fenestrata* and the rest of the species-group.

DISTRIBUTION. MADAGASCAR. The type of *fenestrata* is stated by Butler to have been taken at Antananarivo (=Tananarive) in central Madagascar.

MATERIAL EXAMINED. Types. Holotype ♂ of *fenestrata* Butler, MADAGASCAR ; Drepanidae genitalia slide No. 591. Holotype ♂ of *forata* Warren, MADAGASCAR ; Drepanidae genitalia slide No. 590. Both types in the British Museum (Natural History).

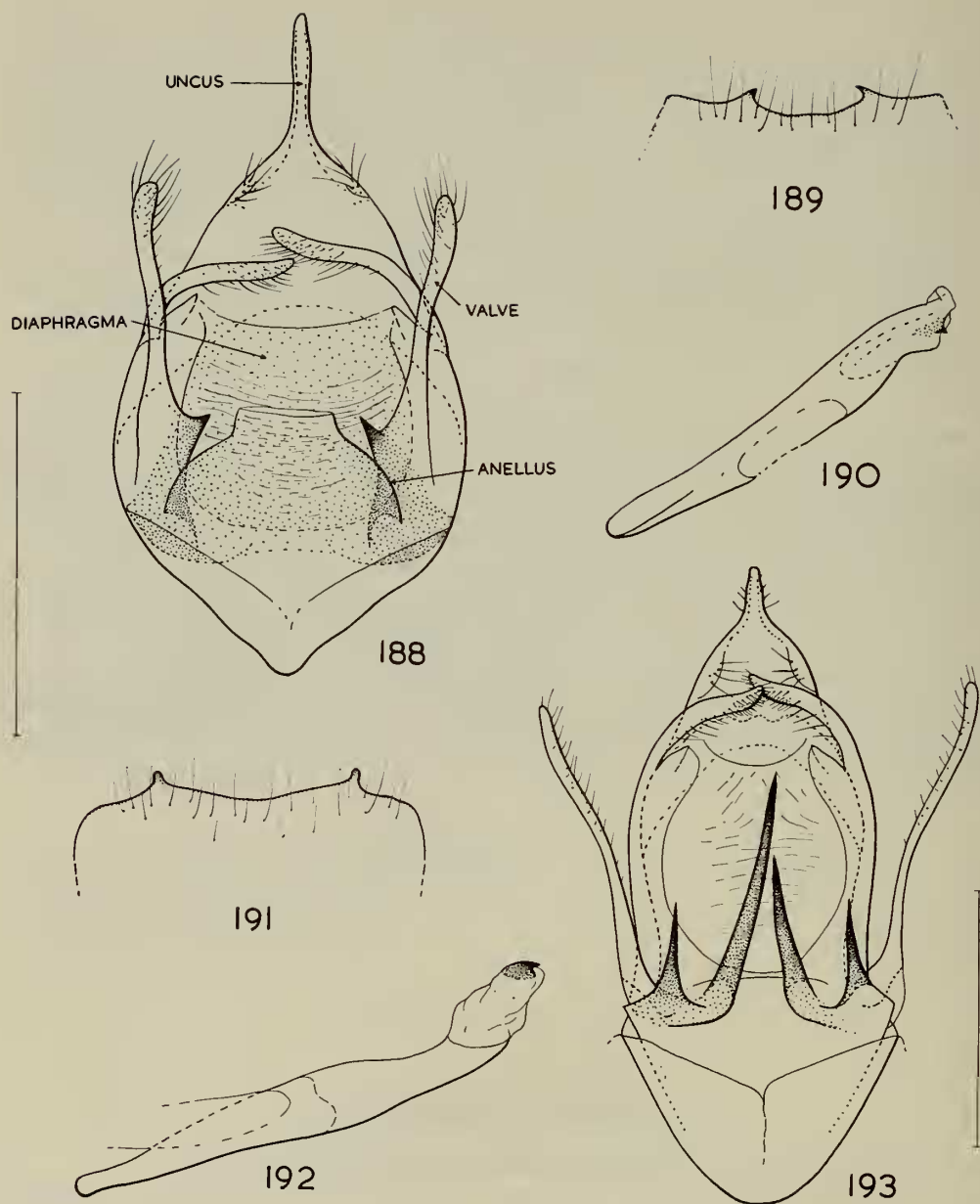
### *Crociniis prolixa* sp. n.

(Text-figs. 191–193 ; Pl. 12, fig. 319)

DESCRIPTION. Palp and head reddish brown. Antenna brownish orange.

Colour of thorax and legs as for corresponding surface of wing, but front surface of prothoracic femur and tibia brownish red.

Fore wing strongly falcate (Plate 12, fig. 319) ; outer margin moderately convex. Small group of hyaline patches distal to end of cell (patches confluent in holotype). Upper surface of fore wing reddish brown (palest at base) lightly speckled with blackish and reddish scales, and speckled with highly lustrous scales in costal area and between postmedial fascia and outer margin. Trace of dark, reddish, antemedial fascia, edged proximally with highly lustrous



FIGS. 188-193, *Crocinis*, ♂ genitalia. 188-190, *fenestrata*. 188, ♂; 189, posterior margin of eighth abdominal sternite; 190, aedeagus. 191-193, *proluxa*. 191, posterior margin of eighth abdominal sternite; 192, aedeagus; 193, ♂.

scales ; hyaline patches edged first with dark brown then with highly lustrous scales ; well marked, postmedial fascia from apex to three-fifths inner margin, bent inwards just before costa, edged distally with highly lustrous scales ; terminal row of interneural, highly lustrous dashes ; fringe dark reddish brown, tipped with black at apex and at middle of wing but with white elsewhere. Outer margin of hind wing strongly convex anteriorly ; concave between  $Cu_2$  and anal margin. Ground-colour of hind wing chiefly brownish orange, but orange anteriorly ; speckled with black, brown and highly lustrous scales between antemedial fascia and outer margin of wing ; antemedial fascia double, continuous with postmedial fascia of fore wing, dark reddish brown (black at anal margin in one paratype) edged proximally and distally with highly lustrous scales ; terminal row of highly lustrous dashes ; fringe dark reddish brown, tipped with white near anal margin of wing.

Under surface of fore wing orange proximally, brownish red between end of cell and outer margin of wing ; lightly speckled with black between postmedial fascia and outer margin. Trace of anterior part of postmedial fascia. Hind wing orange, suffused with brownish red near outer margin ; lightly speckled with black distally. Small black discocellular spot.

♂ GENITALIA (Text-figs. 191–193) : valve with two basal processes, unequal in length ; aedeagus with single, hooked cornutus ; posterior margin of eighth sternum as in figure.

♀. Unknown.

MEASUREMENTS. A.P.R. : ♂. Not known (no complete antenna). Wing : ♂. 13.5, 13.0–14.0 mm. (3).

DISCUSSION. Separated from the closely related *viettei* by the slightly convex outer margin of the fore wing, and in the genitalia by the differently shaped processes of the valve and the presence of only one cornutus on the vesica. The variation in the colour of the antemedial fascia on the hind wing is dealt with above.

DISTRIBUTION. Known from central and east MADAGASCAR. The range of this species overlaps that of *viettei*.

MATERIAL EXAMINED. Type. Holotype ♂, MADAGASCAR, forêts d'Antsianaka, 1888 (*Humblot*) ; Drepanidae genitalia slide No. 594 ; in the British Museum (Natural History).

Paratypes. *British Museum (Natural History)*. CENTRAL MADAGASCAR : 1 ♂, forêts d'Antsianaka [W. of Ambositra], 1888 (*Humblot*). *Muséum national d'Histoire naturelle, Paris*. EAST MADAGASCAR : 1 ♂, Route de Lakato, 15 km. Ankasoka, 1,100 m., 2–10.i.1951 (*Viette*). *Institut scientifique, Madagascar*. N.E. MADAGASCAR : 1 ♂, Sambava, Marojejy, Andasy II, 1,300 m., xii.1958 (*Raharizonina*).

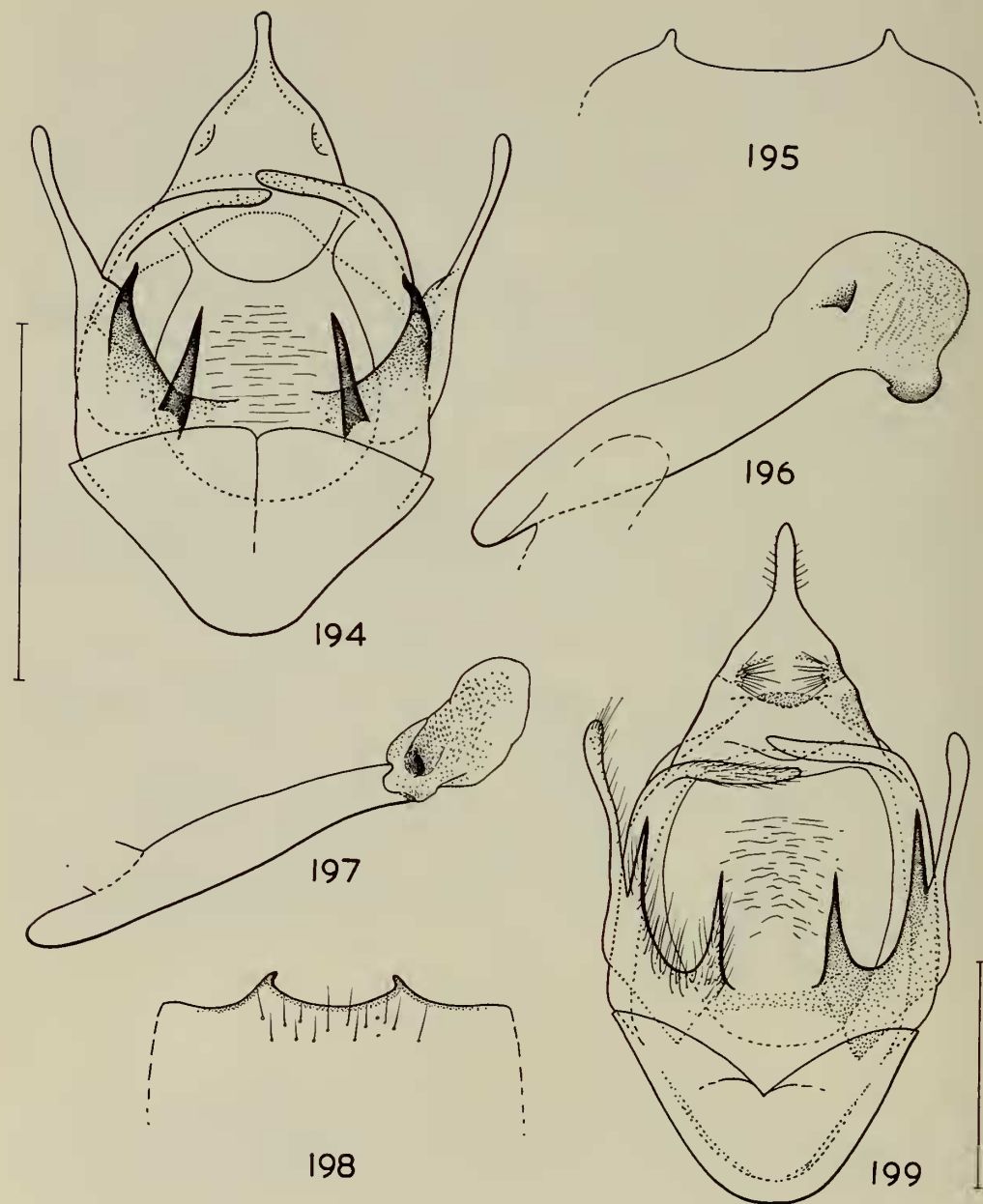
### *Crocini viettei* sp. n.

(Text-figs. 194–196 ; Pl. 12, figs. 317, 318)

DESCRIPTION. ♂. Head and palps reddish buff, reddish brown (holotype), grey-brown or nearly black. Upper surface of antennal shaft brownish buff (holotype) or buff.

Thorax and abdomen dull orange (holotype), yellow, brown or almost black dorsally ; similar in colour to adjacent surface of wing. Ventral surface of thorax and abdomen buff (holotype) or brownish buff. Legs buff, but front surface of fore leg brownish buff (holotype) or brown.

Costa of fore wing slightly convex (holotype) or straight, except at apex and base (Plate 12, figs. 317, 318) ; outer margin straight except at apex of wing. Colour-pattern of wings as for *prolixa*. Coloration of upper surface variable (see Discussion). Upper surface of fore wing of holotype reddish brown lightly speckled with highly lustrous scales, the latter concentrated at apex and along costal area. Ground-colour of hind wing as for fore wing, speckled with highly



FIGS. 194-199, *Crocinis*, ♂ genitalia. 194-196, *viettei*. 194, ♂; 195, posterior margin of eighth abdominal sternite; 196, aedeagus. 197-199, *boboa*. 197, aedeagus; 198, posterior margin of eighth abdominal sternite; 199, ♂.



lustrous scales; anterior third of wing orange; area between lines of antemedial fascia darker, proximal line bordered proximally with highly lustrous white scales, distal line similarly bordered distally. Arrangement of hyaline patches on fore wing as in holotype of *prolixa* (Plate 12, fig. 318) except that the patch between  $Cu_{1a}$  and  $Cu_{1b}$  is twice as broad. Under surface of fore wing buff (holotype), orange or yellow anterior and posterior to cell in basal two-thirds of wing, lightly speckled with black; cell and distal third of wing pink (holotype), orange, or reddish brown, or very dark brown in those specimens with dark upper surface coloration.

♂ GENITALIA (Text-figs. 194–196): valve with two basal processes, more distal process arcuate apically; aedeagus with two cornuti, vesica scobinate; posterior margin of eighth sternum as in figure.

♀. Unknown.

MEASUREMENTS. A.P.R.: ♂. 11. Wing: ♂. 11.5, 11.0–12.5 mm. (10).

DISCUSSION. This species is externally similar to the closely related *prolixa* except for the straight outer margin to the fore wing. The differently shaped valve processes and the presence of two cornuti on the vesica distinguish the male genitalia from those of *prolixa*.

There is remarkable individual variation in the coloration in this species. Except for an anterior orange or yellow area on that part of the hind wing probably normally overlapped by the fore wing, the upper surface of both wings may be pale buff, pale reddish brown, reddish brown, dark purplish brown or reddish brown, nearly black, or buff heavily speckled with black (Plate 12, fig. 317). In one buff example the area on each wing between the transverse fasciae is heavily speckled with black, and the area distal to the postmedial fascia on the fore wing slightly less heavily speckled. There is striking variation, too, in the size of the hyaline patch on the fore wing which may be slightly larger than in the holotype (Plate 12, fig. 318) or entirely absent (Plate 12, fig. 317).

DISTRIBUTION. Known only from east MADAGASCAR. Apparently sympatric with *prolixa* in this part of the island.

MATERIAL EXAMINED. Type. Holotype ♂, MADAGASCAR EST, env. de Périnet, forêt d'Analamazoatra, 910 m., 13.iii.1955 (*Viette*); Drepanidae genitalia slide No. 592; in the Muséum national d'Histoire naturelle, Paris.

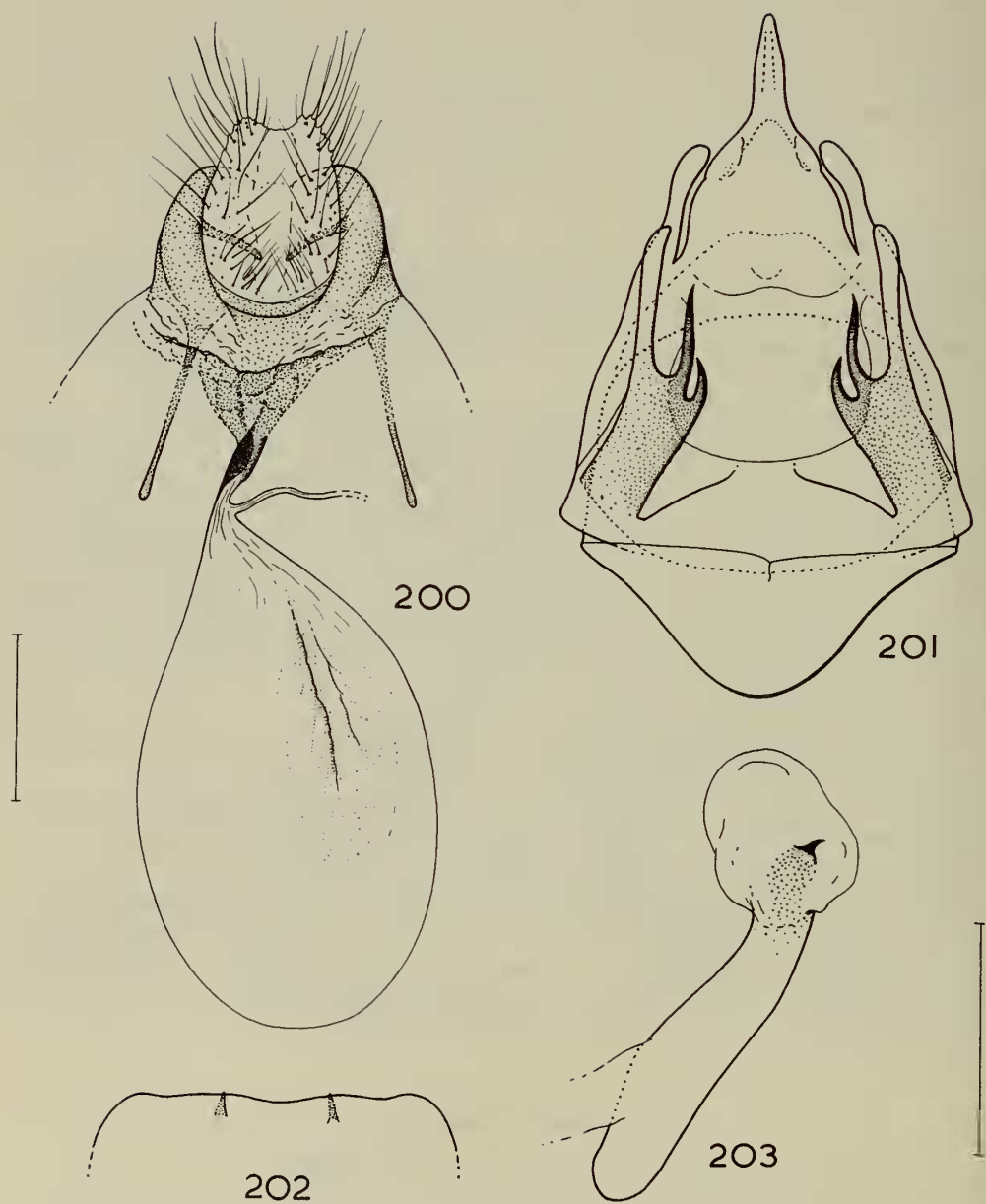
Paratypes. Muséum national d'Histoire naturelle, Paris. EAST MADAGASCAR: 5 ♂, type locality, 11–16.iii.1955 (*Viette*); 6 ♂, Andranotobaka, Ambatolampy, 1,400 m., iii.1957 (*Griveaud*); 1 ♂, Marove, Moramango, 960 m., 1957 (*Griveaud*). Institut scientifique, Madagascar. NORTH-EAST MADAGASCAR: 2 ♂, Sambava, Marojejy, Andasy II, 1,300 m., xii.1958 (*Raharizonina*).

### *Crociniis boboa* sp. n.

(Text-figs. 197–200; Pl. 12, fig. 320)

DESCRIPTION. ♂. Palps and front of head brown (holotype) or pale yellowish brown; vertex of head and upper surface of antennal shaft paler than palps.

Dorsal surface of thorax greyish buff, scales tipped with light grey anteriorly; ventral surface pale buff, but more brownish anteriorly. Trochanter, femur and tibia of fore leg greyish brown; remainder of leg and whole of remaining legs pale buff, except for last tarsal segment which is very dark brown distally.



FIGS. 200-203, *Crocinis*, genitalia. 200, *boboa*, ♀. 201-203, *canescens*, ♂. 201, ♂; 202, posterior margin of eighth abdominal sternite; 203, aedeagus.

Fore wing slightly falcate (Plate 12, fig. 320) ; outer margin slightly convex. Upper surface of both wings lustrous except for posterior cell-spot on hind wing and dark edge of hyaline patch on fore wing. Upper surface of fore wing pale purplish brown proximally and posteriorly, pale buff apically, speckled with black ; trace of arcuate antemedial fascia and postmedial fascia ; hyaline patch bordered with dark reddish brown. Upper surface of hind wing pale purplish brown except for broad yellow terminal band, speckled with black ; trace of postmedial fascia at anterior margin of wing ; black posterior cell-spot and trace of discocellular spot. Under surface of both wings lustrous yellowish white speckled with black ; speckling heaviest distal to cell on fore wing and anterodistally on hind wing ; fore wing with trace of grey postmedial fascia ; hind wing with black discocellular spot and less well-marked posterior cell-spot.

♂ GENITALIA (Text-figs. 197–199) : valve with two nearly equal processes ; aedeagus with single irregularly shaped cornutus ; eighth sternum as in figure.

♀. Known only from one example. Similar to male, but outer margin of fore wing slightly more strongly convex, and ground-colour of upper and under surface of both wings reddish buff except for brownish white area posterior to cell under hind wing.

♀ GENITALIA (Text-fig. 200) : anterior apophyses long ; ostial segment forming sclerotized ring at base of ovipositor lobes ; posterior apophyses short ; signum irregular in shape, elongate.

MEASUREMENTS. A.P.R. : ♂. 12 ; ♀. 9. Wing : ♂. 16.0, 15.0–16.5 mm. (7) ; ♀. 20.5 mm. (1).

DISCUSSION. Similarities in the male genitalia suggest that *boboa* is closely related to *canescens* and *viettei* from which it can be distinguished by the shape and colour-pattern of the wings, and in the male genitalia by the shape of the cornutus and position of the valve processes.

Little individual variation in the coloration of the wings is present in the available material.

DISTRIBUTION. Known only from east MADAGASCAR.

MATERIAL EXAMINED. Type. Holotype ♂, MADAGASCAR EST, env. de Périnet, forêt d'Analamazoatra, 910 m. (*Viette*) ; Drepanidae genitalia slide No. 1266 ; in the Muséum national d'Histoire naturelle, Paris.

Paratypes. Muséum national d'Histoire naturelle, Paris. EAST MADAGASCAR : 5 ♂, same locality as type, 17.I–19.IV.1955 (*Viette*) ; 1 ♂, 10 km. Est. Marove, Moramanga, 960 m., V.1957 (*Griveaud*). British Museum (Natural History). EAST MADAGASCAR : 1 ♀, Périnet, 149 km. east of Tananarivo, 20.X–10.XI.1930 (*Olsouffieff*). Institut scientifique, Madagascar. EAST MADAGASCAR : 1 ♂, E. Marove, Moramanga, 960 m., X.1957 (*Griveaud*).

### *Crociniis canescens* sp. n.

(Text-figs. 201–203 ; Pl. 11, fig. 313)

DESCRIPTION. ♂. Palp and front of head grey ; scales of vertex grey at base, nearly white apically ; upper surface of antenna buff (holotype) or greyish buff.

Dorsal surface of thorax greyish buff (holotype) or grey ; scales whitish apically. Ventral surface of thorax buff (holotype) or greyish buff, except for brown (holotype) or greyish brown band bordering head. Front surface of legs greyish buff (holotype) or grey, remaining surfaces of legs, buff (holotype) or greyish buff ; front leg most intensely coloured ; distal margin of last tarsal segment darker than rest of tibia. Whole of upper surface of both wings lustrous. Outer margin of fore wing slightly convex ; ground-colour of upper surface (Plate 11, fig. 313) buff (holotype) or greyish buff, speckled with dark grey over whole of wing and with pale grey proximally, darker and more greyish distal to postmedial fascia and in region between medial fasciae

posterior to cell ; antemedial fascia dark grey at costa, bordered proximally with pale grey posterior to cell ; postmedial fascia edged distally with greyish white except near costa, expanded at costa into dark grey spot. Upper surface of hind wing buff (holotype) or greyish buff, speckled with dark grey ; area between transverse fasciae grey ; sub-basal fascia and antemedial fascia edged proximally and distally respectively with greyish white ; posterior cell-spot dark brown. Under surface of fore wing buff (holotype) or greyish buff, heavily speckled proximally with dark grey ; well marked grey postmedial fascia. Ground-colour of under surface of hind wing as fore wing ; well marked, dark brown, discocellular spot and posterior cell-spot ; weakly marked, grey, postmedial fascia at anterior border of wing.

♂ GENITALIA (Text-figs. 201–203) : valve with two arcuate medial processes, vesica with single hooked cornutus ; eighth abdominal sternum as in figure.

♀. Not known.

MEASUREMENTS. A.P.R. : ♂. 10. Wing : ♂. 18.0, 16.5–19.0 mm. (3).

DISCUSSION. Although externally unlike *boboa* in many respects, comparison of the genitalia indicates that *canescens* may have close affinities with *boboa*.

DISTRIBUTION. North-west and central MADAGASCAR.

MATERIAL EXAMINED. Type. Holotype ♂, MADAGASCAR, Sambirano, dct. Analalava, poste Maromandia, Manongarivo, 1,150 m., xii.1960 (*Andria*) ; Drepanidae genitalia slide No. 1277 ; in the Muséum national d'Histoire naturelle, Paris.

Paratypes. *Muséum national d'Histoire naturelle, Paris*. CENTRAL MADAGASCAR : 1 ♂, Andranotobaka, Ambatolampy, 1,900 m., iii.1957 (*Griveaud*). *Institut scientifique, Madagascar*. N.W. MADAGASCAR : 1 ♂, Sambirano, dct. Analalava, poste Maromandia, Manongarivo, 1,150 m., xii.1960 (*Griveaud*).

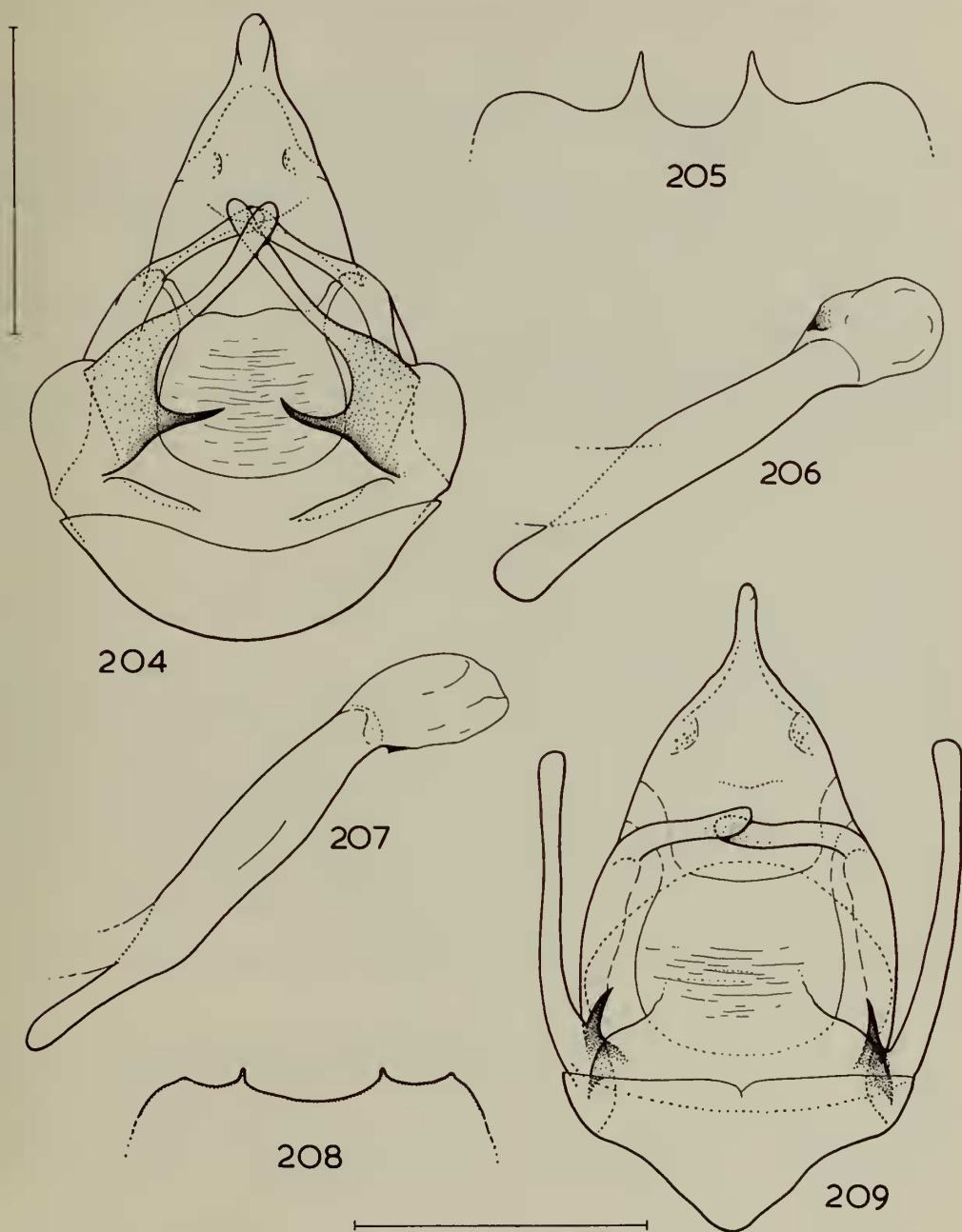
### *Crociniis imaitsoana* sp. n.

(Text-figs. 204–206 ; Pl. 11, fig. 314)

DESCRIPTION. ♂. Palp and front of head orange-brown (holotype) or reddish brown ; vertex of head and proximal half of upper surface of antennal shaft slightly paler than palp ; distal half of antennal shaft buff.

Dorsal surface of thorax dull orange (holotype) or brown, scales tipped with light grey on anterior part of thorax ; pale pinkish buff ventrally, but reddish brown anteriorly. Front surface of all legs proximal to tarsus pinkish brown, remaining surfaces pale buff ; all tibiae pale buff except for last segment which is pinkish brown distally ; fore legs more intensely coloured than mid or hind legs. Outer margin of fore wing moderately convex (Plate 11, fig. 314). Upper surface of fore wing lustrous distal to antemedial fascia ; ground-colour yellowish brown or orange (holotype) lightly speckled with dark brown, orange-brown between medial fasciae in holotype ; antemedial fascia dark brown edged proximally with white ; hyaline patch bordered by non-lustrous reddish brown scales ; postmedial fascia black (holotype) or dark brown, edged distally with white, especially noticeable at apex, fascia bent inwards near apex of wing ; colour of fringe doubtful. Outer margin of hind wing concave posteriorly ; upper surface yellowish brown or orange-brown (holotype), with broad, slightly paler, yellowish brown or orange (holotype) marginal band and pale buff basal area, lightly speckled with dark brown ; area between transverse fasciae of holotype darker than rest of wing ; trace of dark sub-basal fascia edged proximally with white ; well-marked brown or black (holotype) antemedial fascia edged distally with white ; colour of fringe doubtful. Under surface of both wings dull pinkish buff, speckled with grey ; weakly marked postmedial fascia on both wings.





FIGS. 204-209, *Crocinis*, ♂ genitalia. 204-206, *imaitsoana*. 204, ♂; 205, posterior margin of eighth abdominal sternite; 206, aedeagus. 207-209, *felina*. 207, aedeagus; 208, posterior margin of eighth abdominal sternite; 209, ♂.



♂ GENITALIA (Text-figs. 204–206) : valve with single basal process ; aedeagus with one hooked cornutus ; posterior processes of eighth sternum close together, unusually long.

♀. Unknown.

MEASUREMENTS. A.P.R. : ♂. 11. Wing : ♂. 17.5, 16.5–18.5 mm. (2).

DISCUSSION. Except for its larger size *imaitsoana* is superficially most like *prolixa*. The genitalia, however, do not indicate a particularly close relationship between these two species.

The difference in coloration, dealt with above, between the two known specimens suggests that this species may prove to be as highly variable as *viettei*.

DISTRIBUTION. Known only from central MADAGASCAR.

MATERIAL EXAMINED. Type. Holotype ♂, Andringitra, Ampalavao, Anjavidi-lava, forêt d'Imaitso, 2,030 m., 18.i.1958 (*Griveaud*) ; Drepanidae genitalia slide No. 1579 ; in the Muséum national d'Histoire naturelle, Paris.

Paratype. Muséum national d'Histoire naturelle, Paris. CENTRAL MADAGASCAR : same locality data as holotype.

### *Crocini felina* sp. n.

(Text-figs. 207–209 ; Pl. 11, fig. 316)

DESCRIPTION. ♂. Palp, head and proximal half of upper surface of antennal shaft dark brown ; distal half of antennal shaft slightly paler.

Dorsal surface of thorax dark brown ; ventral surface brownish buff. Front surface of all legs proximal to tarsus dark brown, remaining surfaces brownish buff ; proximal half of tarsus as for rest of leg, last tarsal segment very dark brown. Outer margin of fore wing slightly convex at middle ; apex very strongly produced (Plate 11, fig. 316). Outer margin of hind wing evenly convex. Upper surface of both wings lustrous dark brown, darkest between transverse fasciae on each wing. Antemedial fascia of fore wing and sub-basal fascia of hind wing edged proximally with pale grey ; distal margin of postmedial fascia of fore wing similarly edged between apex and cell. Hyaline patch on fore wing conspicuous. Very dark brown posterior cell-spot on hind wing. Under surface of both wings yellowish brown speckled with dark brown, but with buff posterior band ; hind wing with dark brown discocellular spot and posterior cell-spot ; both wings with numerous, scattered, pale grey scales along outer margin.

♂ GENITALIA (Text-figs. 207–209) : valve with single, short, basal spine ; vesica of aedeagus with single, pointed cornutus ; eighth sternum as in figure.

♀. Not known.

MEASUREMENTS. A.P.R. : ♂. 10. Wing : ♂. 16.0 mm. (1).

DISCUSSION. The male genitalia of this species most closely resemble those of *fenestrata*, but there is no other evidence of any near relationship between these two species.

Although only one specimen of this striking species is known, I believe there are enough significant specific characters to merit the inclusion of this description.

DISTRIBUTION. Known only from the type locality in N.E. MADAGASCAR.

MATERIAL EXAMINED. Holotype ♂, MADAGASCAR EST, Sambava R.N.XII Marojejy-Ouest, 1,140 m., ix–x.1959 (*Soga*) ; Drepanidae genitalia slide No. 1269 ; in the Muséum national d'Histoire naturelle, Paris.

SPECIES-GROUP *spicata****Crocinis spicata* sp. n.**

(Text-figs. 210–212 ; Pl. 13, figs. 321, 322)

DESCRIPTION. ♂. Palp, front of head and narrow band at posterior margin of eyes scarlet (holotype and most examples) or reddish brown. Vertex of head reddish brown, each scale tipped with white. Upper surface of antennal shaft buff.

Dorsal surface of thorax buff (holotype) or brown, speckled with white anteriorly. Ventral surface of thorax buff. Front surface of trochanter, femur and tibia of each leg scarlet (holotype) or reddish brown ; front of tarsus grey-brown ; remaining surfaces buff ; fore legs most strongly coloured.

Ground colour of both wings buff (holotype) or one of several shades of light brown and grey, variously speckled with brown (holotype) or black. Colour-pattern as in Plate 13, figs. 321, 322. Upper surface of fore wing usually (including holotype) with faintly marked antemedial fascia ; trace of spot near base of cell ; brown (holotype reddish brown) or black discocellular spot and posterior cell-spot ; reddish brown (holotype), brown or yellow-brown postmedial fascia edged proximally with white near apex ; apex of wing reddish brown (holotype), brownish buff, brown or black proximal to postmedial fascia ; large, conspicuous, black patch at about two-thirds costa in a few specimens (not holotype) ; circular hyaline patch distal to end of cell between  $Cu_{1a}$  and  $Cu_{1b}$  in five specimens (not holotype) ; second hyaline patch between  $Cu_{1b}$  and 1A in one specimen (Plate 13, fig. 322) ; few specimens with diffuse, blackish sub-basal and subterminal fascia, most prominent near anal margin (Plate 13, fig. 322) ; fringe buff (holotype), or shade of brown darker than ground-colour. Upper surface of hind wing with cell-spots as on fore wing ; well-marked antemedial fascia, similar in colour to postmedial fascia on fore wing ; trace of sub-basal fascia ; broad, diffuse blackish postmedial and subterminal fascia in a few specimens (not holotype) ; fringe reddish brown. Under surface of fore wing greyish orange (holotype) or reddish grey ; costa scarlet, speckled with dark grey (holotype) or black ; weakly marked postmedial fascia. Under surface of hind wing similar in colour to fore wing but paler and more heavily speckled with dark grey or black ; cell-spots as for upper surface, otherwise without pattern.

Colour of dorsal surface of abdomen as for ground-colour of upper surface of wings ; ventral surface of abdomen pale buff.

♂ GENITALIA as in Text-figs. 210–212. Some variation exists in the size of the eighth sternal processes. Aedeagus sigmoid. Eighth abdominal tergite as for *tetrathyra* (see Text-fig. 217).

♀. Not known (but see generic description).

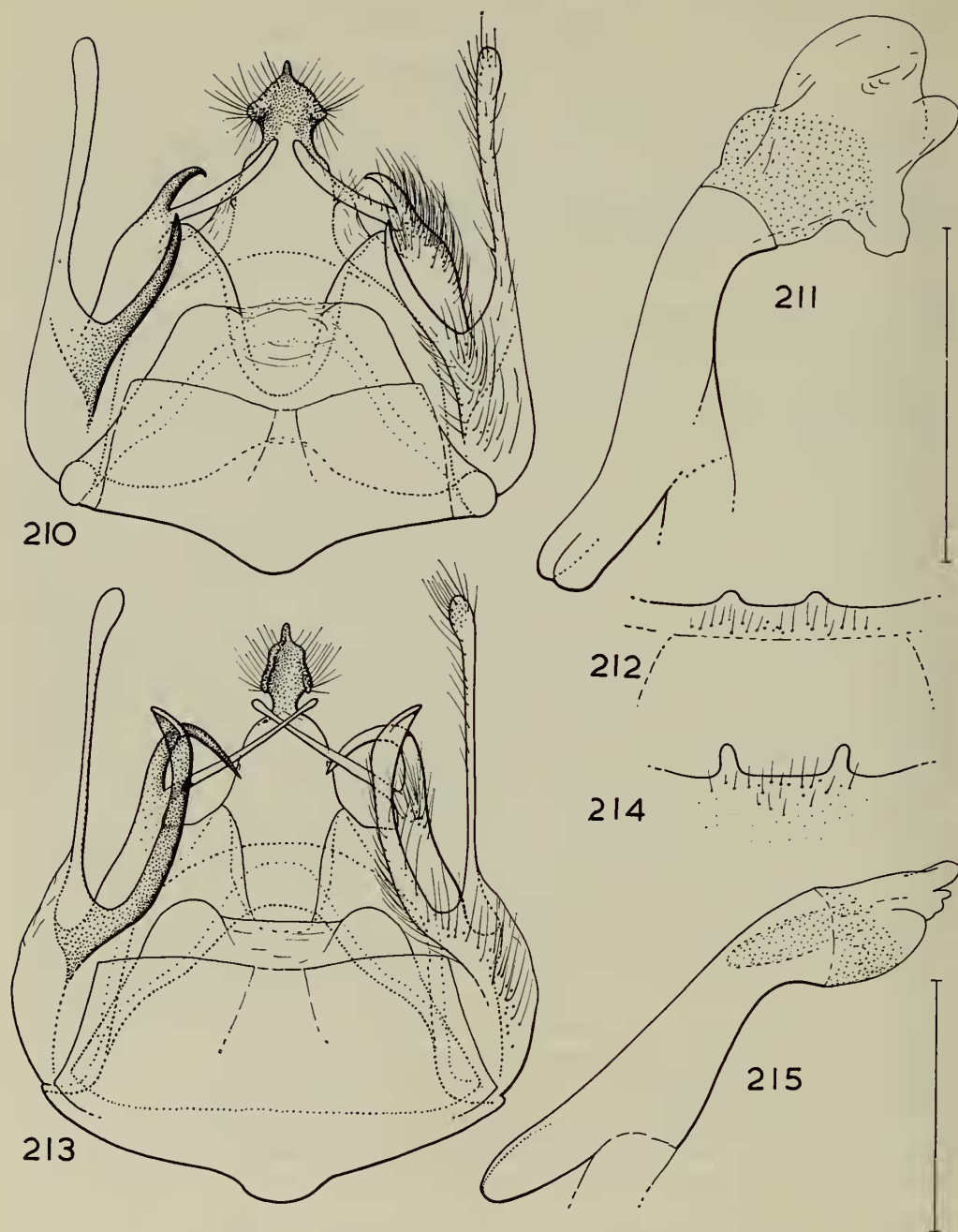
MEASUREMENTS. A.P.R. : ♂. 12. Wing : ♂. 14.5, 13.0–17.0 mm. (18).

DISCUSSION. Although this species is apparently indistinguishable externally from its close relative *licina* it is easily separated from it by the male genitalia, in particular by the shape of the vincular processes but also by the uncus, aedeagus and the usually shorter eighth sternal processes.

The high degree of individual variation in the coloration of the upper surface of the wings has been indicated in the description. Equally striking is the variation in the marking of the fasciae, which may be either conspicuous or hardly discernible, and the presence or absence of hyaline patches in the fore wing.

DISTRIBUTION. Known only from northern and eastern MADAGASCAR.

MATERIAL EXAMINED. Type. Holotype ♂, MADAGASCAR EST, env. de Périnet, forêt d'Analamazoatra, 910 m., 19.ii.1955 (*Viette*) ; Drepanidae genitalia slide No. 605 ; in the Muséum national d'Histoire naturelle, Paris.



FIGS. 210-215, *Crocinis*, ♂ genitalia. 210-212, *spicata*. 210, ♂; 211, aedeagus; 212, posterior margin of eighth abdominal sternite. 213-215, *licina*. 213, ♂; 214, posterior margin of eighth abdominal sternite; 215, aedeagus.

Paratypes. *Muséum national d'Histoire naturelle, Paris*. N. MADAGASCAR: 1 ♂, Montagne d'Ambre, Les Roussettes, 1,000 m., 5.xii.1958 (*Viette*). E. MADAGASCAR: 1 ♂, Sambava. Réserve nationale XII, Andasy II, 1,550 m., v.1959 (*Soga*); 1 ♂, Moromanga, Ankasoka 1,130 m., 21.x.1957 (*Griveaud*); 2 ♂, Ankasoka, Route Lakato, 1,100 m., 1,130 m., 2.xii.1950 (*Griveaud*), 2-10.i.1959 (*Viette*); 14 ♂, env. de Périnet, forêt d'Analamazoatra, 910 m., 24.xi.-25.xii.1954, 15.i.1955 (*Viette*). *British Museum (Natural History)*. E. MADAGASCAR: 1 ♂, Périnet, iii.1935 (*Olsofjeff*).

### *Crociniis licina* sp. n.

(Text-figs. 213-215; Pl. 13, fig. 323)

DESCRIPTION. ♂. Palp, front of head and narrow band bordering posterior margin of eyes reddish brown (holotype) or scarlet. Vertex of head reddish brown, each scale with white apex. Upper surface of antennal shaft buff (dark brown at base in Périnet paratype).

Thorax as for *spicata*. Fore legs as for *spicata*, outer surface of femur and tarsus reddish brown; (remaining legs damaged, coloration probably as for *spicata*).

Ground-colour of upper surface of both wings very pale, slightly yellowish brown, lightly speckled with greyish brown in holotype, more heavily speckled in paratypes (see discussion). Costa reddish brown (holotype) or scarlet basally. Colour-pattern of upper surface as in Plate 13, fig. 323; trace of sub-basal fascia and spot near base of cell; weakly marked antemedial fascia, white in holotype, dark brown or dark brown and white in paratypes; discocellular spot white, edged with yellowish brown in holotype, entirely yellowish brown in paratypes; posterior cell-spot yellowish brown; oblique postmedial fascia either very pale yellowish brown, but white near apex of wing (holotype and one paratype), or entirely white (remaining paratype) edged proximally with greyish brown and distally with yellowish brown; fringe reddish brown; circular hyaline patch distal to end of cell between  $Cu_{1a}$  and  $Cu_{1b}$ ; smaller hyaline patch immediately posterior to latter between  $Cu_{1b}$  and 1A only on left fore wing of holotype. Upper surface of hind wing with very dark brown discocellular spot and posterior cell-spot; weakly marked, dentate, whitish sub-basal fascia; oblique antemedial fascia same colour as, and continuous with, postmedial fascia of fore wing; fringe reddish brown. Under surface of fore wings pale reddish buff, but more yellowish near costa, lightly speckled with dark brown in holotype and one paratype, heavily speckled in remaining paratype; trace of postmedial fascia. Under surface of hind wing reddish buff distally, pale buff proximally; dark brown cell-spots as on upper surface; trace of postmedial fascia anteriorly, approximately parallel to outer margin.

Colour of abdomen as for corresponding adjacent surface of hind wing.

♂ GENITALIA as in Text-figs. 213-215. Most anterior of more heavily sclerotized processes of vinculum hood-like apically; side of aedeagus opposite point of entry of ductus seminalis almost straight; posterior processes of eighth abdominal sternum as in Text-fig. 214 in all three specimens examined. Eighth abdominal tergum as for *tetrathyra* (see Text-fig. 217).

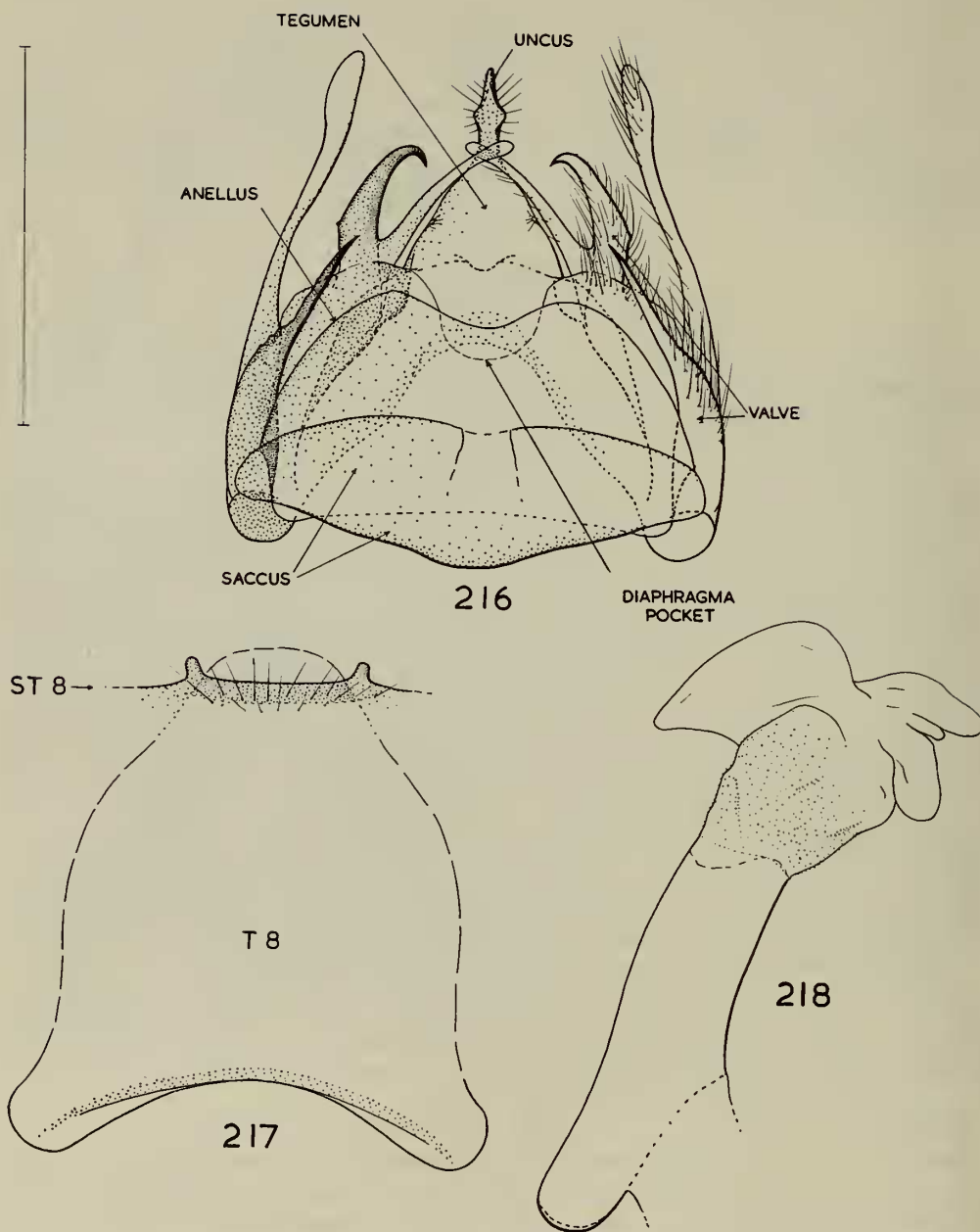
♀. Not known (but see generic description).

MEASUREMENTS. A.P.R.: ♂. 12. Wing: ♂. 16.5, 15.0-18.0 mm. (3).

DISCUSSION. This species appears to be indistinguishable from *spicata* externally, but the shape and relative sizes of all four pairs of vincular processes of the male genitalia are diagnostic. The shape of the uncus, aedeagus and the eighth sternal processes also differentiate the two species.

Some aspects of the individual variation in coloration have been mentioned in the description. Most striking is the variation in the ground-colour of the upper surface of the wings which is basically pale yellowish brown. In the holotype there is a





FIGS. 216-218, *Crocinis tetrathyra*, ♂ genitalia. 216, ♂ ; 217, eighth abdominal tergite and posterior margin of sternite ; 218, aedeagus.



light speckling of greyish brown ; in one paratype the ground is almost completely obscured with dark greyish brown except for the posterodistal part of the hind wing ; and in the second paratype the hind wing is entirely dark greyish brown (except for wing markings), while the fore wing is similarly coloured except for a pale yellowish brown area distal to the end of the cell and anterior to  $Cu_{1b}$ .

DISTRIBUTION. Known only from eastern MADAGASCAR.

MATERIAL EXAMINED. Type. Holotype ♂, MADAGASCAR EST, env. de Périnet, forêt d'Analamazoatra, 910 m., 27.xi.1954 (*Viette*) ; Drepanidae genitalia slide No. 603 ; in the Muséum national d'Histoire naturelle, Paris.

Paratypes. *Museum national d'Histoire naturelle, Paris*. E. MADAGASCAR : 1 ♂, env. de Périnet, forêt d'Analamazoatra, 910 m., 18.iii.1955 (*Viette*) ; 1 ♂, Sambava, Marojejy Ambinanitelo, 500 m., xii.1958 (*Griveaud*).

***Crociniis tetrathyra* (Mabille) comb. n.**

(Text-figs. 216–218 ; Pl. 13, fig. 324)

*Drepana* (*Gogane*) *tetrathyra* Mabille, 1899 : 724.

*Drapena tetrathyra* (Mabille) ; Gaede in Seitz, 1927 b : 289.

*Gogana tetrathyra* (Mabille) ; Gaede, 1931 : 12.

DESCRIPTION. ♂. Palp, front of head and narrow band bordering posterior margin of eyes reddish brown or brown ; vertex of head pale buff or reddish buff, each scale tipped with white.

Dorsal surface of thorax pale buff or reddish buff, each scale of anterior part of vestiture tipped with white ; ventral surface very pale buff. Front surface of fore trochanter and femur reddish brown or greyish brown, front surface of tibia and tarsus pale brown or pale buff ; front surface of remaining legs pale brown or pale buff, as for inner surface of all legs.

Ground-colour of both wings very pale slightly yellowish grey or very pale buff, usually only lightly speckled with dark brown. Colour-pattern of wings as in Plate 13, fig. 324. Upper surface of fore wing with trace of sub-basal fascia ; trace of diffuse antemedial fascia in some specimens ; dark brown or black discocellular spot, and usually posterior cell-spot ; sometimes with small hyaline patch immediately distal to end of cell between  $M_2$  and  $M_3$ , another between  $M_3$  and  $Cu_{1a}$ , and larger patch between  $Cu_{1a}$  and  $Cu_{1b}$  ; latter hyaline patch usually present ; no patches in two examples ; oblique, pale buff, postmedial fascia, white near apex, bordered proximally by brown and distally by yellowish brown ; two dark brown or black streaks at right-angles to postmedial fascia usually present at costa (see Plate 13, fig. 324). Upper surface of hind wing with trace of sub-basal fascia ; usually well-marked antemedial fascia continuous and concolorous with postmedial fascia on fore wing ; dark cell-spots (as on fore wing) sometimes present. Under surface of both wings pale buff, lightly speckled with brown, but middle of fore wing slightly darker and pinkish as for band along outer margin in hind wing.

♂ GENITALIA (Text-figs. 216–218) : uncus slender, vincular processes as in figure ; aedeagus stout, nearly straight on side opposite point of entry of ductus seminis ; eighth abdominal sternum unmodified except at posterior margin ; eighth tergum well sclerotized in anterior region.

♀. Not known.

MEASUREMENTS. A.P.R. : ♂. 15. Wing : ♂. 12.5, 12.0–13.0 mm. (10).

DISCUSSION. Some specimens of this species are separable externally from the closely related *spicata* and from *licina* by the presence on the fore wing of two well marked, dark, costal streaks ; and most specimens are smaller than nearly all the examples of *spicata* and *licina* studied. A reliable diagnosis of *tetrathyra* can only be made, however, by examining the shape of the uncus and vincular processes.

There is apparently less individual variation in *tetrathyra* than in the other two species of this species-group.

**MATERIAL EXAMINED.** Type. The type material of this species is lost. A thorough search by Dr. P. Viette in the Muséum national d'Histoire naturelle and by myself and my colleagues in the collections of the British Museum (Natural History), in one of which museums the original material was probably deposited, has failed to reveal any of the material of *tetrathyra* examined by Mabilie. Because of the close similarity between *tetrathyra* and the two other species of the species-group it is necessary to designate a neotype for *tetrathyra*. The above description is based on a series of ten males (originally in the Rothschild collection) from Diego Suarez in northern Madagascar ; they closely match the original description and are probably correctly identified as *tetrathyra*. Neither the sex nor the exact source of Mabilie's material are known accurately as no details other than " Madagascar " accompany the original description. I have selected one of the ten males as the NEOTYPE. It bears the following data : " Diego Suarez, 8 March 1917 (*G. Mélou*) ; Rothschild bequest B.M. 1939-1 ; Photographed B.M. negative No. 31063 ; Drepanidae genitalia slide No. 608 ; *Crocinis tetrathyra* (Mabilie), det. A. Watson 1963, Neotype " (data from each label separated by a semi-colon).

Other material. *British Museum (Natural History)*. N. MADAGASCAR : 9 ♂, Diego Suarez, i.vii.1917 (*Mélou*).

### ***ISOSPIDIA* gen. n.**

(Gender : feminine)

(Text-figs. 219-227 ; Pl. 14, figs. 326-330 ; Map 6)

Type-species : *Oreta angustipennis* Warren, 1904.

**DESCRIPTION.** ♂, ♀. Proboscis vestigial ; palp extending to just above labrum, with vestiture of elongate scales on ventral or anterior surface ; antennae closely lamellate, each lamella touching adjacent lamellae only at its base and apex.

Meso- and metathoracic tibia each with one pair of terminal spurs. Costa of fore wing nearly straight except at base and apex ; apex distinctly falcate ; outer margin straight or slightly convex. Outer margin of hind wing evenly rounded. Fore wing venation :  $R_1$  arising from close to end of cell or on short stalk with  $R_{2+3}$  ;  $R_{2+3}$  and  $R_{4+5}$  closely apposed, sometimes on short stalk from cell, separating into their elements near apex without forming areole or with  $R_4$  anastomosing at a point or for short distance with  $R_3$  to form areole.  $Sc + R_1$  anastomoses with  $R_s$  for short distance distal to end of cell in hind wing. Antemedial fascia of upper surface of fore wing present in *brunneola*, absent in *angustipennis* ; conspicuous discocellular spot and in a few specimens a weakly marked posterior cell-spot ; well marked oblique postmedial fascia. Upper surface of hind wing with well-marked antemedial fascia continuous with postmedial fascia of fore wing ; otherwise unmarked. Upper surface of hind wing unmarked, but fore wing either with trace of upper surface pattern or as strongly marked as upper surface. (See Plate 14.)

**GENITALIA.** ♂ : uncus clothed with long setae, shielded ventrally by a pair of acuminate arms ; vinculum approximately "8"-shaped ; valve attenuate, apically acuminate ; aedeagus with stout, spinose, apical process ; eighth abdominal sternum and tergum modified to form part of genitalia, posterior margin of each emarginate or concave, anterior apodemes well developed. ♀ : eighth segment considerably modified and heavily sclerotized dorsally and laterally ; two pairs of setose ovipositor lobes ; signum a pair of spinose, invaginate, hemispherical cups (*angustipennis*) or a single spinose cup (*brunneola*).

DISCUSSION. The presence of paired elongate processes (possibly representing the gnathus) ventral to the uncus in the male, a highly modified eighth abdominal segment in the female, together with similarities in the coloration and colour-pattern, suggest that *Isospidia* is probably most closely allied to *Uranometra* Bryk. The colour-pattern, and to some extent the coloration, suggest affinities with *Spidia* Butler, though neither the male nor female genitalia indicate a close relationship.

Particularly striking individual variation in the coloration is present in *angustipennis*, and in both known species of the genus the areole in the fore wing may be either present or absent.

Notable morphological characters in the genitalia include the highly modified eighth segment in the female, and in the male the slender acuminate processes lying beneath the uncus which are possibly homologous with the similarly placed processes in the genitalia of *Uranometra* Bryk.

One species, *angustipennis*, is represented by two subspecies.

The species *brunneola* has been transferred to this genus from *Uranometra* Bryk.

DISTRIBUTION (Map 6). SIERRA LEONE, IVORY COAST, GHANA, CAMEROUN, CONGO, CENTRAL AFRICAN REPUBLIC and UGANDA ; almost exclusively from rain-forest or montane forest regions.

***Isospidia angustipennis* (Warren) comb. n.**

(Text-figs. 219-224 ; Pl. 14, figs. 326-329 ; Map 6)

*Oreta angustipennis* Warren, 1904 : 461.

*Oreta angustipennis* Warren ; Gaede in Seitz, 1927 b : 288. [Fair fig.]

*Oreta angustipennis* Warren ; Gaede, 1931 : 43.

*Oreta* (?) *hylaëina* Aurivillius, 1925 : 1290.

*Oreta glaucinoe* Hampson, 1914 : 104. **syn. n.**

*Oreta glaucinoe* Hampson ; Gaede, 1931 : 44.

DESCRIPTION. ♂, ♀. Palp, front of head and narrow band bordering posterior margin of eyes brownish pink (holotype), brownish scarlet or scarlet, vertex of head yellowish brown ; upper surface of base of antennal shaft as for front of head, remainder pale buff.

Dorsal surface of thorax buff (holotype), pale yellow or yellow ; ventral surface very pale buff. Front surface of whole of fore leg pink (holotype) or scarlet ; front of mid and hind legs pink and buff ; remaining surfaces of legs very pale buff.

Ground-colour of upper surface of wings yellow, pale yellow (holotype), pale yellowish brown, pink, brown, or grey variously speckled with brown (see account of individual variation below). Colour-pattern as in Plate 14, figs. 326-329. Fore wing with conspicuous dark brown (holotype) or black discocellular spot and trace of posterior cell-spot ; well-marked, oblique, variously coloured postmedial fascia (pale brown bordered distally with yellow in holotype), extending from near apex to one-half anal margin or to a point nearer to base than tornus ; dark dash on costa near apex ; dark patch on anal margin of both wings in holotype of Ugandan subspecies and in seven other specimens of the species, this patch usually associated with broad dark band extending along proximal side of postmedial fascia from cell to anal margin ; fringe yellow at apex of wing, then brown to about mid-point of outer margin, remainder yellow or buff. Antemedial fascia of upper surface of hind wing same colour as, and continuous with, postmedial fascia of fore wing. Ground-colour of under surface of fore wing pale yellow (holotype), lemon-yellow, dull pink or yellowish grey, but usually (including holotype) more brownish proximal to post-medial fascia.



Abdomen same colour as corresponding adjacent surface of hind wing. Antemedial fascia of hind wing continued across abdomen as a transverse band.

♂ GENITALIA as in Text-figs. 219–220. Setose lobes at base of valve less pronounced in *torulus* than in nominate subspecies. Digitate apical process of aedeagus subject to slight individual variation in length in both subspecies. Each lobe of posterior margin of eighth abdominal sternum with short digitate process in *torulus*. Eighth abdominal tergum similar to that in *brunneola*, weakly sclerotized posteriorly.

Dorsal region of eighth segment in ♀ GENITALIA highly modified and heavily sclerotized (Text-figs. 223, 224). Signum a pair of hemispherical invaginate cups, spinose on internal convex surface.

MEASUREMENTS. A.P.R. : ♂. 5 ; ♀. 3.

DISCUSSION. The differences in colour-pattern between this species and *brunneola* are well-defined. In *angustipennis* the postmedial fascia on the upper surface of the fore wing reaches the anal margin at its mid-point or just proximal to this (not distal to mid-point as in *brunneola*), and neither the antemedial fascia nor the dark streak extending outwards from the cell are present (both present in *brunneola*). In the male genitalia the shape of the saccus, aedeagus, eighth abdominal sternum and the processes at the base of the valve distinguish the two species. The female signum is diagnostic : it is double in *angustipennis* and simple in *brunneola*.

The individual variation in the colour-pattern and coloration is perhaps more striking in this species than in any other African species of the Drepanidae. The most conspicuous specimens are those which possess large dark brown or pinkish patches at about the middle of the anal margin on both wings, e.g. Plate 14, fig. 329. Another striking form is that illustrated in Plate 14, fig. 327 : in this form the normal, yellow ground-colour of the fore wings is replaced, except at the base, by pink or brownish pink ; the hind wing is yellow proximal to the antemedial fascia, but is either entirely pink or brownish pink distal to this fascia or has a broad pink band as in the illustrated specimen. A further interesting colour variation is that illustrated in Plate 14, fig. 326, represented by only two females : in this form the whole of the upper surface of wings is densely speckled with brownish grey.

There is little doubt that *hylaena* has been correctly synonymized with *angustipennis* as although the holotype of *hylaena* is certainly lost (it was deposited in the collection of the Hamburg Museum, which was destroyed during the 1939–45 war) its identity is clear from the reasonably good figure accompanying the original description. The holotype of *glaucinoe* has been compared with the type of *angustipennis* and found to be conspecific.

DISTRIBUTION (Map 6). Ranges from the IVORY COAST to UGANDA. Two specimens from the CONGO (1 ♂, Elisabethville, in the British Museum (Natural History) and 1 ♂, Kapanga, in the Tervuren Museum) belong to this species but their subspecific identity is doubtful.

### *Isopidia angustipennis angustipennis* (Warren)

(Text-figs. 219–221, 223 ; Pl. 14, 326–328 ; Map 6)

DIAGNOSIS. ♂, ♀. Separable from the Ugandan subspecies apparently only by the genitalia. In the male the lobe on the ventral surface of the base of each valve is larger than in *torulus* and the posterior margin of the eighth abdominal sternum lacks the small digitate lobes of *torulus*.

(Text-figs. 219, 220). The shape of the dorsal region of the eighth abdominal segment in the female genitalia is also diagnostic (Text-fig. 223).

MEASUREMENTS. Wing : ♂. 14.0, 12.0–18.0 mm. (34) ; ♀. 16.0, 14.0–19.0 mm. (7).

DISCUSSION. The high degree of colour variation has been mentioned in the species description. Two females examined belong to the grey form (Plate 14, fig. 326) (including the holotype of *glaucinoe*), two to the brown-spotted (Plate 14, fig. 329) (one of the latter has pink fore wings), and the remainder (including the holotype) to the yellow form of the species (Plate 14, fig. 328). Two of the males belong to the brown-spotted form, five to the pink and yellow form (Plate 14, fig. 327), three to a form similar to the latter but with the whole of the hind wing pink or brownish pink, and the remainder to the yellow form.

DISTRIBUTION (Map 6). Known from the IVORY COAST, GHANA, NIGERIA, CAMEROUN and the CENTRAL AFRICAN REPUBLIC.

MATERIAL EXAMINED. Types. Holotype ♀ of *Oreta angustipennis* Warren ; NIGERIA, Anambara Creek ; Drepanidae genitalia slide No. 1190. Holotype ♀ of *Oreta glaucinoe* Hampson ; GHANA, Bibianaka, 700 ft., 27.ix.1911 (*Spurrell*) ; Drepanidae genitalia slide No. 1191. Both types in the British Museum (Natural History). (Type of *Oreta hylaeina* Aurivillius not seen ; ♂ holotype, " S. Cameroun, Assobam-Urwald, 21–24.iv.11 ". See Discussion of species.)

Other material. *British Museum (Natural History)*. IVORY COAST : 1 ♀, 17.i.1956 (*Réal*) ; 1 ♂, 1 ♀, Bingerville, 14.vi.–14.viii.1915 (*Mélou*). GHANA : 1 ♂, Kumasi ; 1 ♂, Aburi, viii.1901 (*Johnson*). NIGERIA : 1 ♂, Ogruga ; 2 ♀, Old Calabar (*Crompton*). CAMEROUN : 24 ♂, 1 ♀, Bitje, 2,000 ft., xii.1907, i–iii.1908, vi–vii.1909, x–xi.1910, x–xi.1912, x–xi.1913 (*Bates* and others) ; 1 ♀, xi (*Schwab*) ; 1, Johann-Albrechts Höhe, 1898 (*Condradt*). CENTRAL AFRICAN REPUBLIC : 2 ♂, Boukoko, 12.i.1950, 13.xii.1959 (*Réal*). *Institut d'Enseignement et de Recherches tropicales, Bondy*. IVORY COAST : 1 ♂ (*Réal*) ; Adiopodoumé (*Réal*). CENTRAL AFRICAN REPUBLIC : 5 ♂, Boukoko M'Baiki, 7–16.ix, 10.xii.1949 (*Réal*).

### *Isospidia angustipennis torulus* ssp. n.

(Text-figs. 222, 224 ; Pl. 14, fig. 329 ; Map 6)

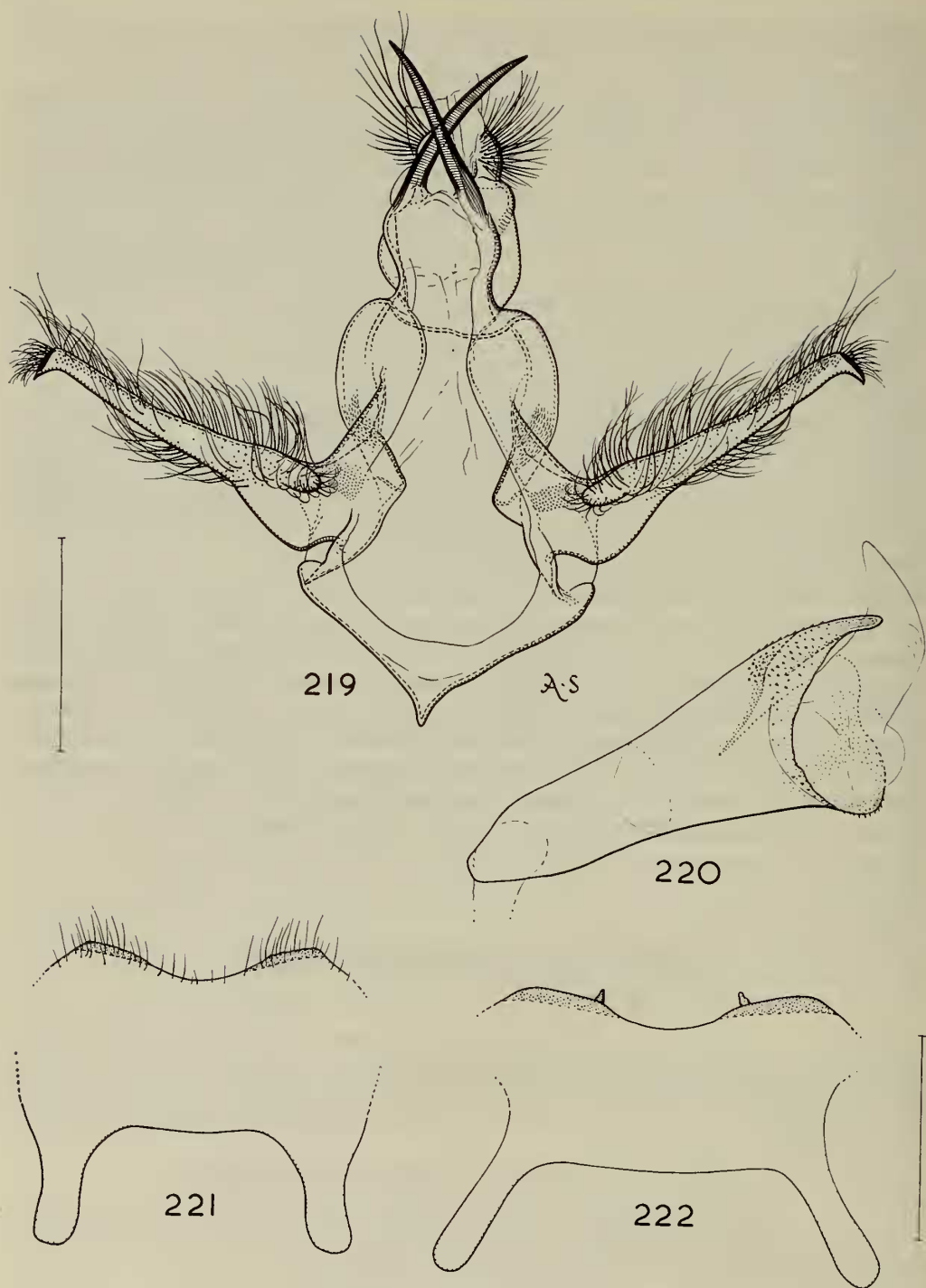
DIAGNOSIS. ♂, ♀. Distinguished from the nominate subspecies by the genitalia. The lobe at the base of the valve is smaller than in the nominate subspecies and two small digitate processes are present at the posterior margin of the eighth abdominal sternum (Text-fig. 222) unlike the nominate subspecies. In the female the shape of the dorsal plate of the eighth segment separates the two subspecies (Text-fig. 224).

MEASUREMENTS. Wing : ♂. 16.0, 15.5–16.5 mm. (5) ; ♀. 18.0 mm. (1).

DISCUSSION. The holotype, a male paratype, and the only female paratype belong to the brown-spotted form of the species (Plate 14, fig. 329) ; the remaining two male paratypes to the yellow form (Plate 14, fig. 328).

DISTRIBUTION (Map 6). Known only from UGANDA.





FIGS. 219-222, *Isospidia*, ♂ genitalia. 219-221, *angustipennis angustipennis*. 219, ♂ ; 220, aedeagus ; 221, eighth abdominal sternite. 222, *angustipennis torulus*, eighth abdominal sternite.

MATERIAL EXAMINED. Type. Holotype ♂, S.W. UGANDA, Kigesi District, Kanungu, Impenetrable forest, 4,500 ft., v.1952 (*Burgess*) ; Drepanidae genitalia slide No. 1195 ; in the British Museum (Natural History).

Paratypes. *British Museum (Natural History)*. UGANDA : 1 ♂, Fort Portal, xii.1934-i.1935 (*Edwards*) ; 1 ♀, Fort Portal, 5,000 ft. ; 31.i.1935 (*Fontaine*). *Coryndon Museum, Nairobi*. UGANDA : 1 ♂, Fort Portal, iii.1959 (*Carcasson*) ; 1 ♂, Ankole, Kalinzu Forest, xi.1961 (*Carcasson*).

***Isospidia brunneola* (Holland) comb. n.**

(Text-figs. 225-227 ; Pl. 14, fig. 330 ; Map 6)

*Callidrepana brunneola* Holland, 1893 : 172. [Poor figure.]

*Uranometra brunneola* (Holland) ; Gaede in Seitz, 1927 b : 287.

*Uranometra brunneola* (Holland) ; Gaede, 1931 : 50.

DESCRIPTION. ♂, ♀. Palp, front of head, and narrow band bordering posterior margin of eyes brownish scarlet. Vertex of head and upper surface of antennal shaft buff.

Dorsal surface of thorax brown, with scales of anterior margin white-tipped ; ventral surface buff. Front surface of whole of fore leg brownish scarlet, remainder of leg buff. Mid and hind leg buff, sometimes with trace of scarlet on front surface of mid leg. Shape and colour-pattern of wings as in Plate 14, fig. 330. Ground-colour of both wings brownish buff speckled with brown. Fore wing with arcuate, brown antemedial fascia ; large, dark brown discocellular spot ; oblique, brown postmedial fascia from near apex to a point over half-way along anal margin from base of wing ; apical area of fore wing darker than rest of wing ; dark streak extending from near apex to discocellular spot ; fringe dark brown proximally, pale brown distally. Upper surface of hind wing with brown antemedial fascia bordered distally with broad, diffuse, brown band ; wing otherwise unmarked ; fringe as for fore wing. Under surface of fore wing pink, lightly speckled with grey ; usually with well-marked, grey postmedial fascia. Hind wing pink or dull yellow beneath, lightly speckled with grey ; without fasciae.

Coloration of abdomen doubtful.

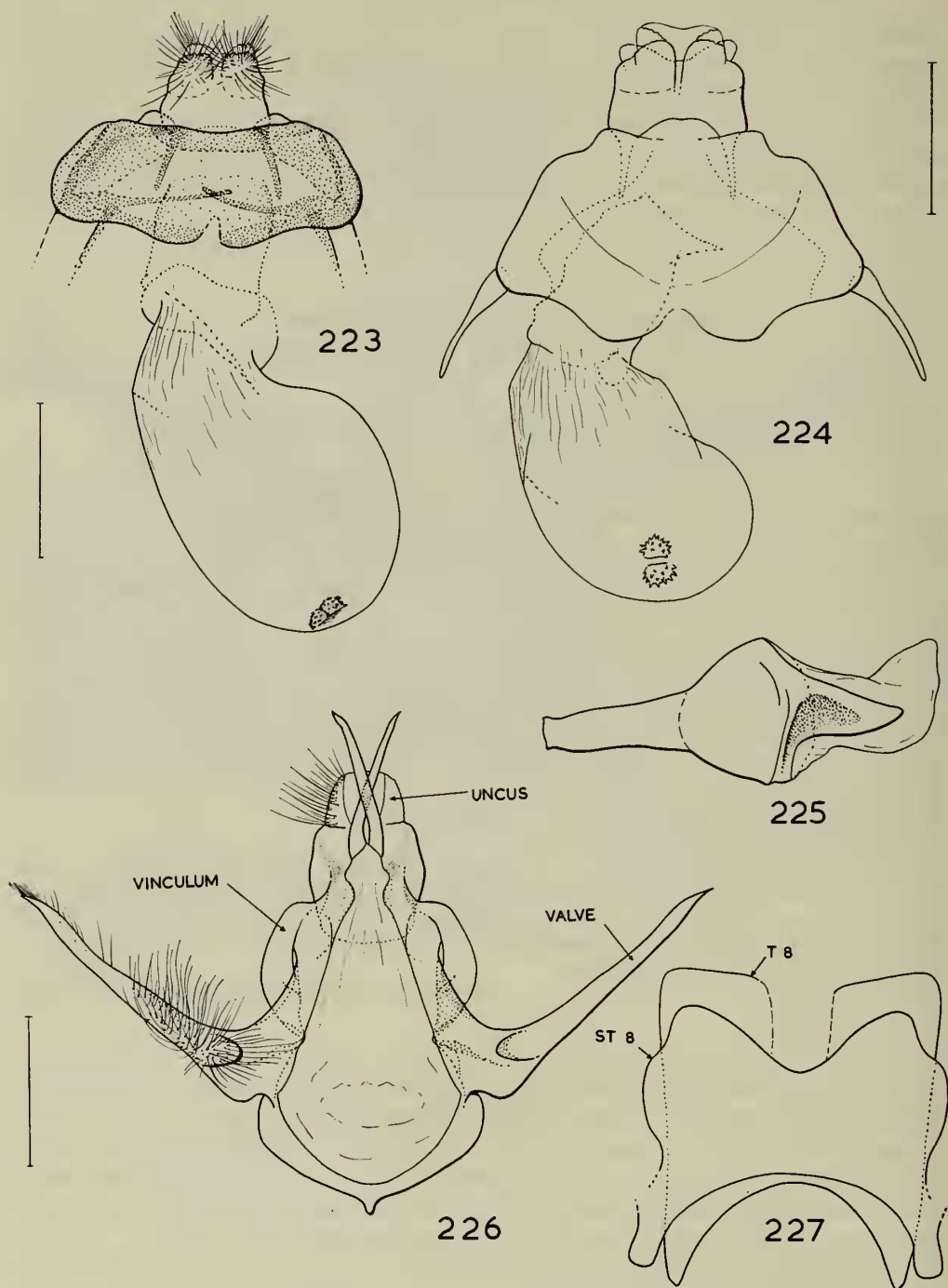
♂ GENITALIA (Text-figs. 225-227) : basal lobe of valve well developed ; aedeagus swollen apically, with broad, spinose process ; eighth abdominal sternum deeply emarginate posteriorly ; eighth tergum as in figure. ♀ GENITALIA (damaged in both females examined) : heavily sclerotized dorsal plate of eighth segment probably distinguishable from that of *angustipennis* ; signum a single, invaginate, spinose cup.

MEASUREMENTS. A.P.R. : ♂. 5 ; ♀. 3. Wing : ♂. 13.0, 12.5-14.0 mm. (3) ; ♀. 16.0, 15.5-16.5 mm. (2).

DISCUSSION. The colour-pattern of the upper surface at once separates this species from *angustipennis*. In *brunneola*, unlike *angustipennis*, an antemedial fascia is present on the fore wing, and the postmedial fascia meets the anal margin at a point over one-half distance from base of wing to tornus. In the male genitalia the larger lobe at the base of the valve, the differently shaped aedeagus and saccus process, and the more deeply emarginate eighth sternum separate this species from *angustipennis*. The simple signum characterizes the female genitalia.

No individual variation, or sexual dimorphism in coloration or wing shape has been found in the material available.

DISTRIBUTION (Map 6). SIERRA LEONE, CAMEROUN, CONGO.



FIGS. 223–227, *Isospidia*, genitalia. 223, *angustipennis angustipennis*, ♀ (dorsal view). 224, *angustipennis torulus*, ♀ (dorsal view). 225–227, *brunneola*. 225, aedeagus; 226, ♂; 227, ♂ eighth abdominal tergite and sternite.

**MATERIAL EXAMINED.** Type. The holotype of *brunneola* (♂, Cameroun, Ogowe River) deposited in the Carnegie Museum has not been seen, but Dr. H. K. Clench kindly sent me drawings of the genitalia and a photograph of the whole insect which enabled me to identify as this species the material listed below.

Other material. *British Museum (Natural History)*. SIERRA LEONE : 1 ♂. CAMEROUN : 1 ♂, Bitje, Ja River, 2,000 ft., x-xi.1912. CONGO : 1 ♀, Lowa Valley, near Walikale, 3,000-4,000 ft., ii.1924 (*Barns*). *Musée Royal de l'Afrique centrale, Tervuren*. CONGO : 1 ♂, Uele, Paulis, 5.i.1960 (*Fontaine*) ; 1 ♂, Luluabourg, 12.vi.1953 (*Fontaine*).

### URANOMETRA Bryk

(Text-figs. 228, 229 ; Pl. 10, fig. 312 ; Map 6)

*Uranometra* Bryk, 1913 : 7. Type-species, by original designation, *Callidrepana oculata* Holland.

*Uranometra* Bryk ; Gaede in Seitz, 1927 b : 287.

*Uranometra* Bryk ; Gaede, 1931 : 50.

**DESCRIPTION.** ♂, ♀. Proboscis vestigial ; palp not extending dorsal to ventral margin of labrum ; antenna unipectinate from base to apex.

Meso- and metathoracic tibia each with single pair of short terminal spurs. Fore wing weakly falcate ; areole elongate ;  $R_1$  and  $R_2$  arising from stem of  $R_s$  towards distal end of areole (as in Text-fig. 1 of *Epicampoptera* Bryk, species-group *erosa*).  $Sc + R_1$  anastomosing with  $R_s$  for short distance distal to end of cell on hind wing. Upper surface of fore wing with conspicuous apical spot, two spots at tornus, strongly marked oblique postmedial fascia, white discocellular spot, and antemedial fascia. Under surface with postmedial fascia corresponding exactly in position with same fascia on upper surface. Hind wing with antemedial fascia on upper surface ; unmarked ventrally.

♂ GENITALIA remarkable in that the eighth abdominal sternum is fused to the saccus, and the aedeagus to the diaphragma. The diaphragma is invaginated to form a pair of large sacs, enclosing numerous elongate setae.

♀ GENITALIA also characteristic ; heavily sclerotized.

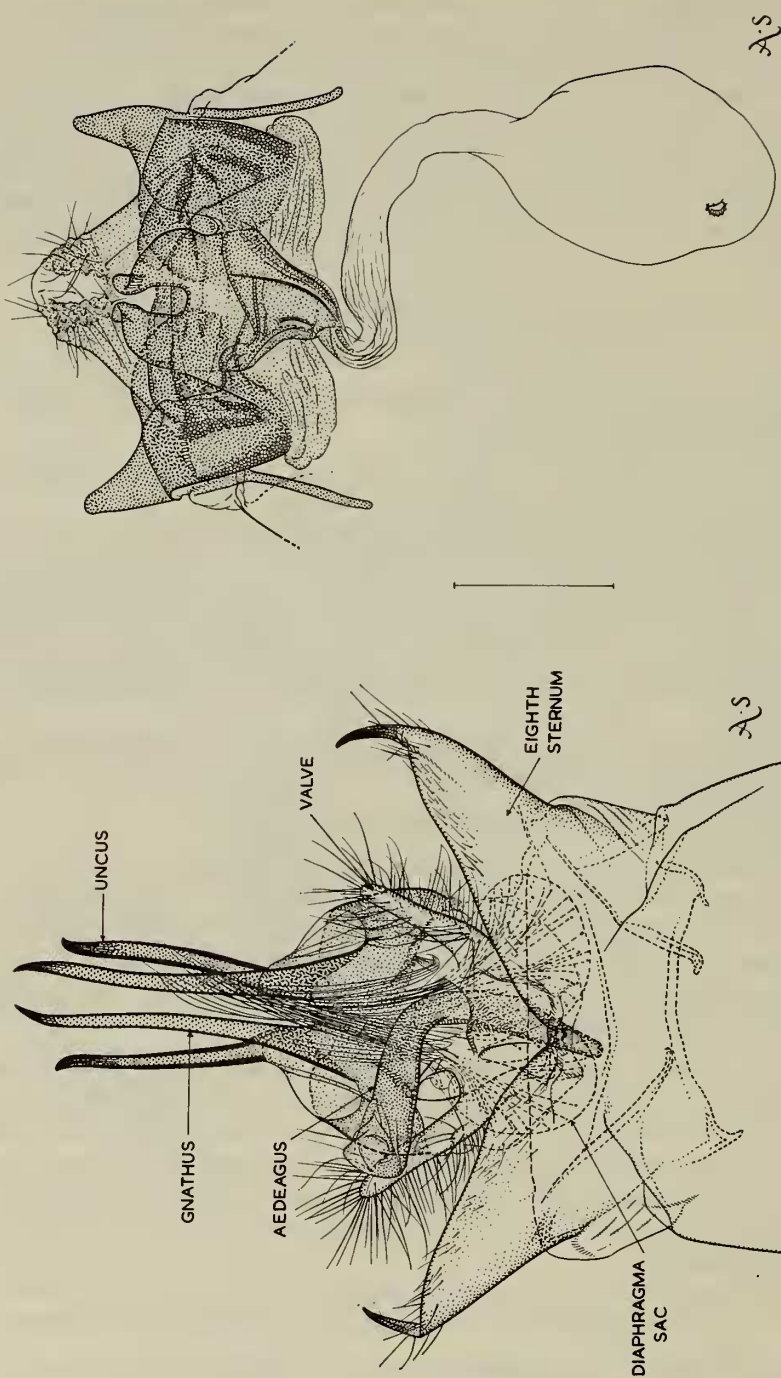
**TAXONOMIC HISTORY.** Bryk (1913) erected this genus for the two species *Callidrepana oculata* Holland and a new species *diagonalis*. Gaede (1927 b) in the first revision of the genus added *Callidrepana brunneola* Holland. In the present revision *diagonalis* is sunk as a synonym of *oculata*, and *brunneola* is transferred to *Isospidia* gen. n. (see page 132). A further name, *Oreta sulphurea* Hampson, is added to the synonymy of *oculata*.

**DISCUSSION.** Characteristic of this monotypic genus is the conspicuous dark apical marking on the fore wing, which immediately separates it from the otherwise similarly patterned and coloured *Isospidia* gen. n. with which *Uranometra* has some affinities. The male genitalia, although strikingly different from those of *Isospidia* in many respects, possess paired elongate processes (possibly representing the gnathus) as in the latter. The eighth abdominal sternum in the female is highly modified in both genera.

There is apparently no sexual dimorphism in the wing shape and coloration nor in the shape of the antennae. There is some individual variation in coloration.

**DISTRIBUTION** (Map 6). *Uranometra* is known to range from GHANA across humid central Africa as far as western UGANDA.





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FIGS. 228-229, *Uranometra oculata*, genitalia. 228, ♂; 229, ♀.

*Uranometra oculata* (Holland)

(Text-figs. 228, 229 ; Pl. 10, fig. 312,; Map 6)

*Callidrepana oculata* Holland, 1893 : 171. [Poor fig.]*Uranometra oculata* (Holland) ; Gaede in Seitz, 1927 b : 287. [Poor fig.]*Uranometra oculata* (Holland) ; Gaede, 1931 : 50.*Uranometra diagonalis* Bryk, 1913 : 9. **syn. n.***Uranometra diagonalis* Bryk ; Gaede, 1931 : 50.*Oreta sulphurea* Hampson, 1914 : 103. **syn. n.***Oreta sulphurea* Hampson ; Gaede, 1931 : 47.

DESCRIPTION. ♂, ♀. Palp dull scarlet. Head yellow above labrum, reddish brown below antennae, buff between and posterior to antennae. Antennal shaft pale buff dorsally.

Anterior margin of thorax very pale yellow dorsally, becoming darker yellow then dull pink posteriorly. Ventral surface of thorax pale yellow, with scarlet band ventral and lateral to eye. Fore legs with scarlet front surface, rest yellow ; remaining legs similarly but less intensely coloured or uniformly yellow.

Wing shape as in Plate 10, fig. 312. Ground-colour of upper surface of both wings yellow striate with brown and reddish brown, sometimes speckled with reddish brown or entirely reddish brown proximal to postmedial fascia on fore wings and proximal to antemedial fascia on hind wing (see remarks below on variation) ; costal area of fore wing, apical part of fore wing (except for black apical spot and narrow surrounding area) and narrow terminal band on hind wings much more lustrous than rest of wing. Upper surface of fore wing with white discocellular spot ; reddish brown postmedial fascia ; black comma-shaped apical marking ; reddish brown subterminal marking immediately anterior to  $Cu_{1b}$  and another above 1A ; marginal area speckled with reddish brown scales or entirely reddish brown. Reddish brown antemedial fascia clearly marked on upper surface of hind wing ; area proximal to this fascia occasionally speckled with reddish brown or entirely reddish brown. Under surface of both wings pale yellowish buff, striate or speckled with reddish brown in some specimens. Fore wing more reddish at base, especially in costal area and in narrow terminal band ; postmedial fascia reddish brown often faintly marked.

Abdomen similar in colour to the adjacent parts of the corresponding surfaces of the hind wings. Antemedial fascia of hind wing continued across abdomen as transverse band.

♂ GENITALIA (Text-fig. 228) : uncus and (?) gnathus bifid ; diaphragma with paired, setose, dorsoventrally flattened invaginations ; valves digitate, setose ; aedeagus arcuate ; eighth sternum greatly modified, deeply emarginate medially at posterior margin.

♀. Similar to male externally.

♀ GENITALIA (Text-fig. 229) : heavily sclerotized ; ostial segment forming thick collar round ovipositor lobes ; ostium covered ventrally by deeply emarginate plate ; bursa copulatrix with single, ovate, concave, spinose signum.

MEASUREMENTS. A.P.R. : ♂, ♀. 19. Wing : ♂. 15.0, 13.5-17.0 mm. (12) ; ♀. 16.5, 15.5-17.5 mm. (3).

DISCUSSION. The presence of individual variation has been mentioned in the description. There is a tendency towards a darkening of the coloration of the area proximal to the postmedial fascia on the upper surface of the fore wing and proximal to the antemedial fascia on the hind wing. In most specimens there is only a light speckling of reddish brown scales on these areas, but in a few examples the wings may be almost uniformly coloured and in others the basal areas are almost completely reddish brown. In the latter darker specimens the terminal part of the fore wing is also a darker reddish brown colour and that part of the dorsal surface of the abdomen adjacent to the dark basal part of the hind wing is reddish brown.

The male genitalia of this species are particularly interesting, although the homologies of the various parts are by no means clear. The most dorsal of the two pairs of acuminate posterior processes probably represent the uncus, and the ventral pair the gnathus. The curious, setose diaphragma pockets may be sensory, but they apparently do not function as scent organs as the setae are less densely arranged and more firmly attached at their base than in typical brush-organ setae. Both the aedeagus and the eighth abdominal sternum are firmly attached by sclerotized connections to the sternal region of the vinculum.

**DISTRIBUTION** (Map 6). Known from the IVORY COAST, GHANA, TOGO, CENTRAL AFRICAN REPUBLIC, CAMEROUN, CONGO and UGANDA. It is quite possible that the Ugandan specimen listed below represents a new subspecies, but as only one female was available for study it has not been possible to establish this with any certainty.

**MATERIAL EXAMINED.** Types. Holotype ♂ of *oculata*; GABON, Ogowe River; in the Carnegie Museum, Pittsburgh. I have not seen this type, but Dr. H. K. Clench has kindly dissected it and sent me photographs and drawings of the whole insect and the genitalia. Holotype ♂ of *diagonalis*; GABON; in the Zoologisches Museum, Humboldt Universität, Berlin. Holotype ♂ of *sulphurea*; GHANA; in the British Museum (Natural History).

Other material. *British Museum (Natural History)*. GHANA: 1 ♂, Gambaga (Bury); 1 ♂, Kumasi, 24.v-18.vii (Sanders). NIGERIA: 1 ♂, Ibadan, 27.vi.1957 (Sutton). CAMEROUN: 2 ♀, Bitje, Ja River, 2,000 ft.; x-xi.1912. CONGO: 2 ♂, Elisabethville, 14.v.51, 14.iv.1952 (Seydel). CENTRAL AFRICAN REPUBLIC: 1 ♂, Boukoko, vii.1949 (Réal). *Institut d'Enseignement et de Recherches tropicales, Bondy*. IVORY COAST: 1 ♀, near Nimba, 29.i.1957 (Réal). CENTRAL AFRICAN REPUBLIC: 2 ♂, Oubangui-Chari; Boukoko, M'Baiki, 10.ix, 6.x.1949 (Réal). *Zoologisches Museum, Humboldt Universität, Berlin*. TOGO: 1 ♂, Bismarckburg [8° 12'N, 0° 33'E], 1-15.ix.1891 (Büttner). CAMEROUN: 1 ♂, Akoafim, 1914 (Tessman). *Muséum d'Histoire naturelle, Geneva*. CONGO: 1 ♂, Katanga, Tshituru, 12.iv.29 (Romieux). *Coryndon Museum, Nairobi*. UGANDA: 1 ♀, Fort Portal, iii.1959 (Carcasson).

### ARCHIDREPANA Warren

(Text-figs. 230-234; Pl. 15, figs. 331-333)

*Archidrepana* Warren, 1902: 487. Type-species, by monotypy and original designation, *Archidrepana saturniata* Warren, 1902.

**DESCRIPTION.** ♂. Proboscis absent. Palp extending short distance above labrum. Whole of antennal flagellum unipectinate.

Meso- and metathoracic tibia each with single pair of short terminal spurs. Fore wing falcate; areole elongate;  $R_1$  arising from near anterior angle of cell,  $R_2$  and  $R_3$  from areole;  $R_4$  anastomosing at a point with  $R_5$  (Text-fig. 230). Outer margin of hind wing weakly concave near anal angle;  $Sc + R_1$  approximating to  $Rs$  for short distance distal to end of cell. Upper surface of fore wing with strongly marked antemedial and postmedial fascia, both sharply bent inwards near costa; usually with several irregularly shaped pale patches at distal end of cell and dark subterminal spot between  $Cu_{1a}$  and  $Cu_{1b}$ . Upper surface of hind wing with well marked sub-basal fascia and medial fascia (continuous respectively with antemedial fascia and postmedial

fascia of fore wing) and dark subterminal spot between  $Cu_{1a}$  and  $Cu_{1b}$ . Postmedial fascia of under surface of fore wing weakly marked except at costa, corresponding in position with same fascia on upper surface of wing. Under surface of hind wing with weakly marked medial fascia corresponding in position with medial fascia of upper surface) and well marked subterminal spot between  $Cu_{1a}$  and  $Cu_{1b}$ . (See Plate 15.)

♂ GENITALIA : uncus simple, directed anteriorly ; homologues of remaining structures in main body of genitalia doubtful ; vesica of aedeagus spinose ; eighth abdominal sternite with long apodemes ; eighth abdominal tergum little modified.

♀. Similar to male but with outer margin of fore wing more strongly convex at middle.

♀ GENITALIA : bursa copulatrix without signum ; eighth segment narrow anteroposteriorly, with long apophyses : ninth segment well sclerotized laterally and ventrally, apophyses shorter than those of eighth segment.

DISCUSSION. I have been unable to find any reference to this genus in the literature subsequent to the date of the original description, Gaede (1927 b and 1931) does not mention *Archidrepana*.

The colour-pattern of the wings is similar in many respects to that of the species-group *erosa* of *Epicampoptera*, but the venation, antennal structure and genitalia are quite different. The curiously modified male genitalia and the absence of a proboscis separate *Archidrepana* from all other African and Madagascan Oretinae.

The only known species, *saturniata*, is remarkably variable in coloration.

DISTRIBUTION. Known only from MADAGASCAR and the COMORES ARCHIPELAGO.

### *Archidrepana saturniata* Warren

(Text-figs. 230-234 ; Pl. 15, figs. 331-333)

*Archidrepana saturniata* Warren, 1902 : 487.

DESCRIPTION. ♂, ♀. Outer surface of palp brown or dark brown, inner surface buff ; terminal segment sometimes paler than more proximal segments. Front of head buff ; vertex very pale buff, nearly white ; dark brown fringe at posterior margin of head laterally and ventrally. Upper surface of antennal shaft very pale buff.

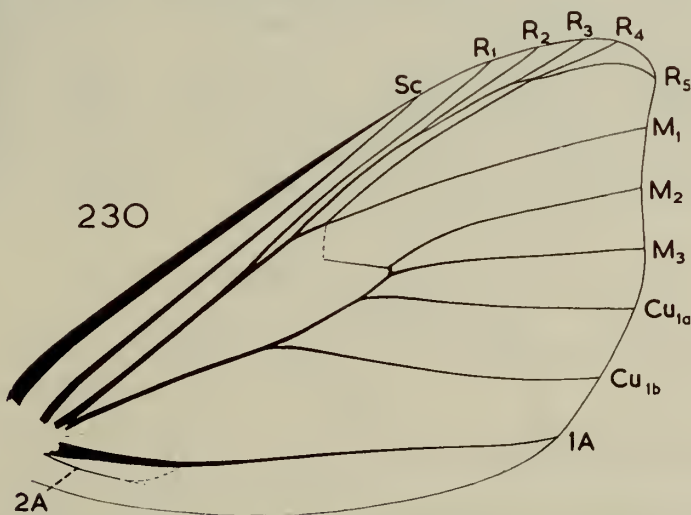
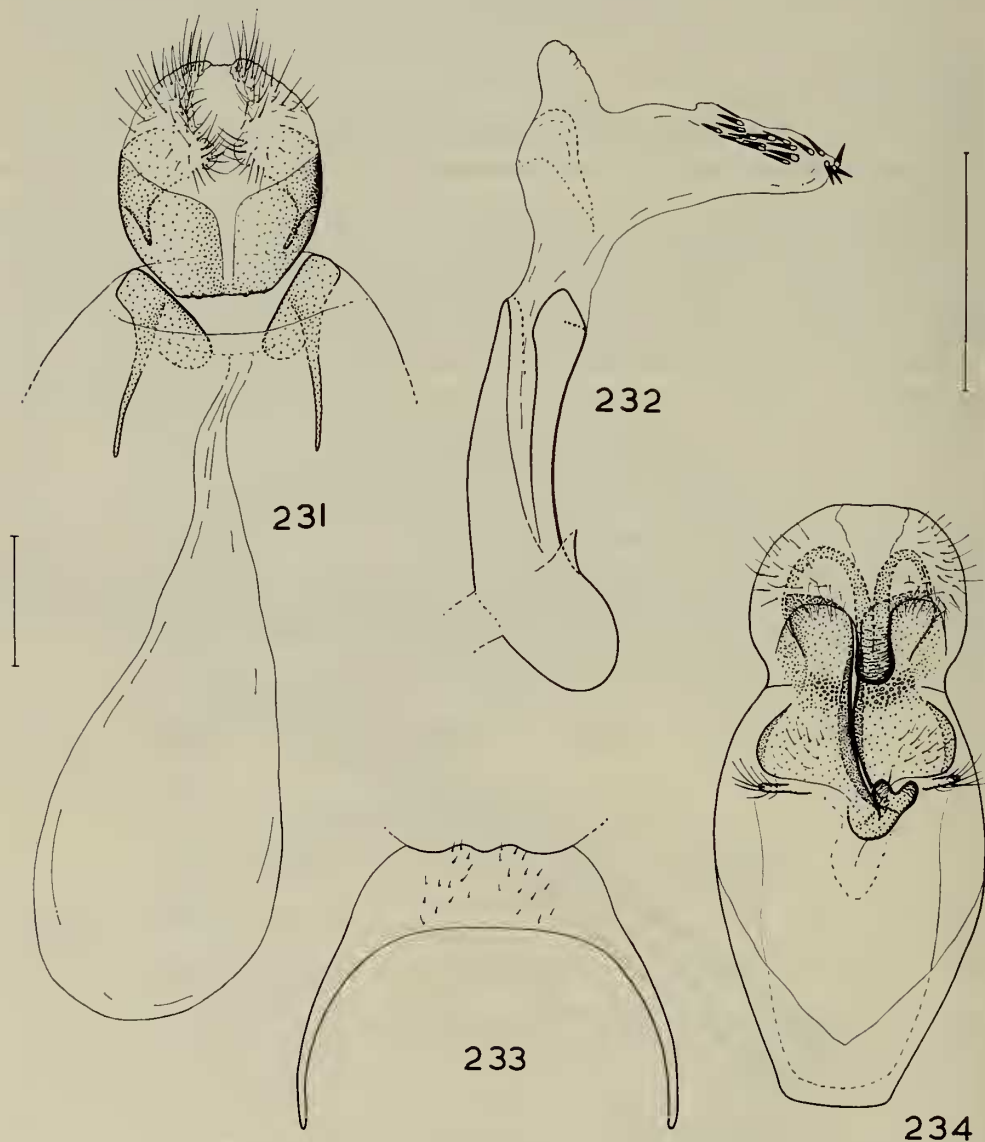


FIG. 230, *Archidrepana saturniata*, ♂ fore wing venation.



Dorsal surface of thorax chiefly buff, pink or orange-scarlet, but invariably very pale buff anteriorly ; two weakly marked, greyish, transverse bands, one near anterior margin, the other across posterior half of tegulae. Ventral surface of thorax very pale buff. Outer surface of trochanter of fore leg brown or greyish brown ; femur and tibia paler, often pinkish ; tarsus pinkish buff ; inner surface of whole of fore leg buff. Colour of remaining legs doubtful, but usually with some dark brown scales at distal end of tibia and at distal margin of each tarsal segment.



FIGS. 231-234, *Archidrepana*, genitalia. 231, ♀ ; 232, aedeagus ; 233, ♂ eighth abdominal sternite ; 234, ♂ (medial processes slightly displaced to right).

Venation of fore wing as in Text-fig. 230 ( $R_1$  may arise closer to end of cell or slightly nearer base of wing than in figure ;  $R_2$  may arise distal or proximal to the position illustrated). Ground-colour of upper surface of both wings (see Plate 15, figs. 331–333) pale buff (holotype), yellow, pink or orange-scarlet, variably speckled with orange-scarlet, reddish grey (holotype) or yellowish grey ; highly lustrous distal to postmedial fascia on fore wing, otherwise moderately lustrous ; fasciae and subterminal spot (latter sometimes absent on fore wing) dark brown ; under surface of both wings very pale buff or pinkish buff. Fore wing lightly speckled with brown proximal to weakly marked postmedial fascia ; strongly speckled and suffused with brown distally, especially in patch near posterior end of postmedial fascia ; conspicuous dark brown marking at costal end of postmedial fascia. Hind wing lightly speckled with brown ; weakly marked postmedial fascia placed approximately parallel to outer margin, expanded into large brown spot anteriorly ; conspicuous dark brown subterminal spot.

Dorsal surface of abdomen as for adjacent part of thorax, but more yellowish posteriorly and with trace of dark, transverse band continuous with sub-basal fascia of hind wing. Ventral surface of abdomen very pale buff.

♂ GENITALIA (Text-figs. 232–234) : valves apparently absent ; (?) gnathus bifurcate, with short, setose, digitate process ; uncus slightly clavate ; aedeagus with longitudinal sulcus apically, vesica with group of stout spines ; eighth sternite as in figure.

♀ GENITALIA as in Text-fig. 231.

MEASUREMENTS. A.P.R. : ♂. 23 ; ♀. 20. Wing : ♂. 17.5, 15.5–19.0 mm. (6) ; ♀. 23.5, 22.0–25.5 mm. (3).

DISCUSSION. The considerable variation in the coloration and degree of striation of the upper surface of the wings mentioned in the description merits special mention. There is also some variation in the venation of the fore wing (see description).

DISTRIBUTION. Known only from the COMORES ARCHIPELAGO (holotype) and MADAGASCAR.

MATERIAL EXAMINED. Type. Holotype ♀, GR. COMORE ; Drepanidae genitalia slide No. 588 : in the British Museum (Natural History).

Other material. *Muséum national d'Histoire naturelle, Paris*. N. MADAGASCAR : 1 ♂, Montagne d'Ambre, Les Roussettes, 1,000 m., 3.xii.1958 (*Viette*) ; 1 ♂, forêt d'Analamerana, 50 km. S.E. Diego-Suarez, 80 m., 29.i–3.ii.1959 (*Viette*). N.E. MADAGASCAR : 1 ♀, env. de Maroantsetra, Ambodivoangy (*Vadon*). E. MADAGASCAR : 1 ♂, Reserve nationale III, Ambatovositra, Andranomalaza, ii.1957 (*Soga*) ; 1 ♂, Réserve nationale III, Andranomalaza, Manarilaza, iii.1957 (*Soga*) ; 1 ♀, Route de Lakato, km. 15 Ankasoka, 1,100 m., 2–10.i.1959 (*Viette*). *British Museum (Natural History)*. N. MADAGASCAR : 2 ♂, Diego Suarez, vi.1917, 9–14.vii.1917 (*Mélou*).

### **ORETOPSIS** gen. n.

(Gender : feminine)

(Text-figs. 235–239 ; Pl. 17, fig. 339)

Type-species : *Spidia vohilava* Viette, 1954.

DESCRIPTION. ♂, ♀. Proboscis vestigial ; palp small, not extending above labrum, with vestiture of long hair-scales on ventral or anterior surface ; antenna closely lamellate from base to apex, each lamella touching adjacent lamellae.

Meso- and metathoracic tibiae each with one pair of apical spurs. Costa of fore wing nearly straight except at base and apex ; outer margin nearly straight in male, arcuate in female.

Outer margin of hind wing evenly arcuate. Venation of fore wing as in Text-fig. 235 ;  $R_1$  arising from cell ; areole absent,  $R_4$  stalked with  $R_5$  and not anastomosed with  $R_3$ .  $Sc + R_1$  in hind wing anastomoses for short distance with  $R_5$  distal to end of cell. Upper surface of fore wing with weakly marked antemedial fascia ; two cell-spots ; oblique, well marked postmedial fascia ; dark costal marking at about three-quarters distance from base to apex ; two closely apposed dark spots near tornus, one on either side of vein 1A. Upper surface of hind wing sometimes with trace of antemedial fascia, continuous with postmedial fascia of fore wing ; otherwise unmarked. Under surface of fore wing sometimes with weakly marked postmedial fascia ; hind wing seldom with trace of antemedial fascia ; both fasciae corresponding exactly in position with same fasciae on upper surface. (See Plate 17.)

GENITALIA. (See description of type-species.)

DISCUSSION. In external facies this genus closely resembles *Oreta* Walker (1855 : 1166), type-species by subsequent designation (Kirby, 1892 : 728) *Oreta extensa* Walker (1855 : 1166), except for the absence of cell-spots on hind wing. It differs from *Oreta* in the following important respects : the fore wing of the female is strongly falcate, more (not less) falcate than the male fore wing ; there is no areole in the fore wing ; in the male genitalia the uncus is bifid and directed anteriorly, the gnathus has no lateral arms, the diaphragma has become modified to form a sclerotized pocket, and the eighth abdominal sternum is longer (antero-posteriorly) than wide. This kind of sexual dimorphism in the shape of the fore wing together with the form of the eighth sternite are characters shared with *Spidia* Butler.

There is considerable individual variation in the coloration of the wings.

The genus is monotypic and apparently confined to MADAGASCAR.

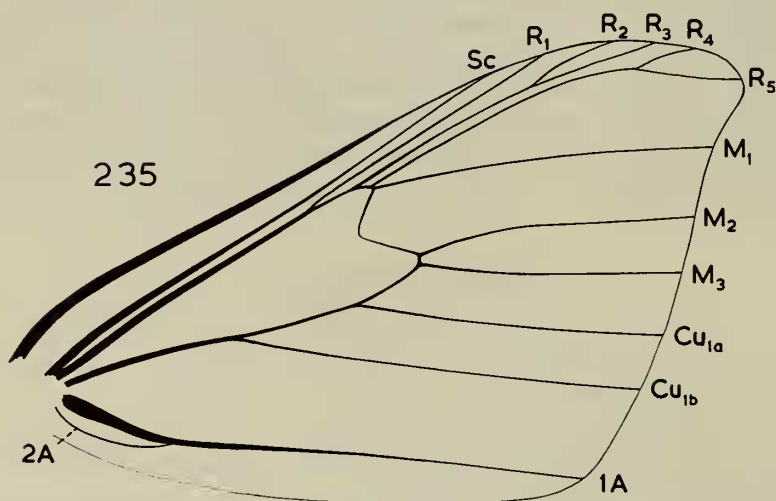
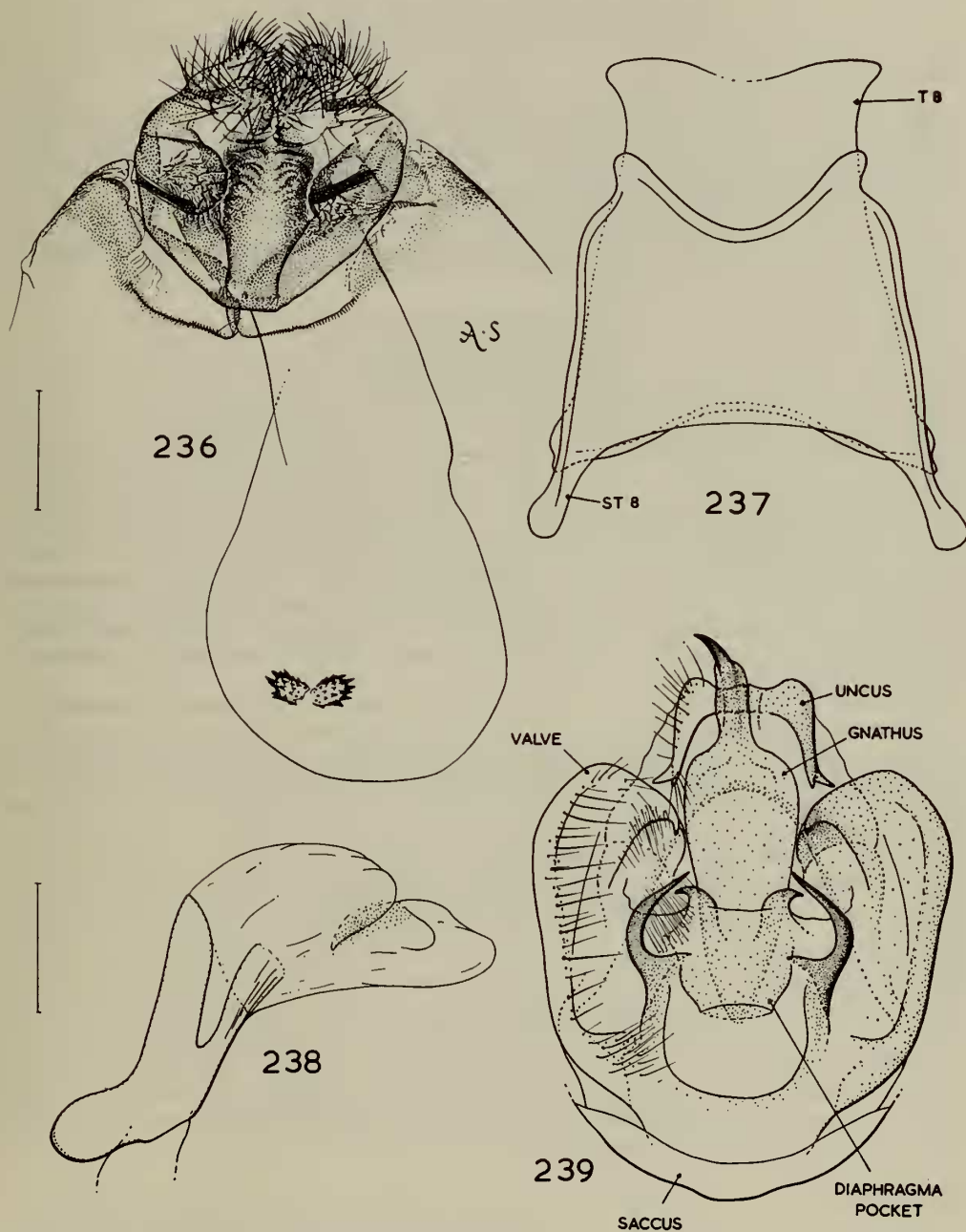


FIG. 235, *Oretopsis vohilava*, ♂ fore wing venation.



FIGS. 236-239, *Oretopsis vohilava*, genitalia. 236, ♀; 237, ♂ eighth abdominal tergite and sternite; 238, aedeagus; 239, ♂.



***Oretopsis vohilava* (Viette) comb. n.**

(Text-figs. 235-239 ; Pl. 17, fig. 339)

*Spidia vohilava* Viette, 1954 : 79.

DESCRIPTION. ♂. Palp reddish brown. Front of head reddish brown, palest ventrally ; scales between base of antennae dark greyish brown, tipped with white, elongate to form fringe ; vestiture of head posterior to antennal bases buff or greyish white. Upper surface of antennal shaft pale buff except for few pink basal segments.

Dorsal surface of thorax buff or pinkish grey, paler at anterior margin ; each scale tipped with white or very pale buff. Ventral surface of thorax pale pink or orange. Legs pale pink or orange, with front surface of fore leg, and sometimes of remaining legs, clothed with grey or grey and white scales.

Ground-colour of upper surface of both wings buff, greenish grey or pinkish grey, variously speckled with black ; fore wing usually darker between antemedial and postmedial fascia, colour pattern as in Plate 17, fig. 339. Upper surface of fore wing with trace of black or brown antemedial fascia, strongly marked at costa ; white discocellular spot and posterior cell-spot ; well marked, oblique, very pale buff or grey postmedial fascia, usually white near apex, bordered proximally with black, greyish brown or greenish brown and distally with pale brown or grey ; black or grey marking at about three-quarters distance from base along costa ; tornal spots usually very dark brown, buff in one specimen ; fringe much darker than ground-colour of wing. Upper surface of hind wing usually with trace of antemedial fascia, otherwise unmarked ; fringe as for fore wing. Under surface of fore wing with pinkish grey or orange-grey costal and anal area, remainder greenish or yellowish grey lightly speckled with darker grey ; trace of postmedial fascia. Under surface of hind wing pinkish grey or orange-grey lightly speckled with darker grey, paler in anal area ; trace of anterior part of antemedial fascia in some specimens.

Abdomen similar in colour to corresponding adjacent surface of hind wing, but pinkish or orange-grey posteriorly.

♂ GENITALIA (Text-figs. 237-239). Uncus bifid, each arm bifurcate apically ; gnathus lanceolate anteriorly, forming part of dorsal wall of diaphragma pocket, heavily sclerotized, acuminate and down-curved (displaced to left in Text-fig. 239) ; valve auriform, produced into short spine posteriorly ; curved spine arising from near saccular region of valve fused at base with two-spined diaphragma pocket ; saccus broad, shallow ; aedeagus as in Text-fig. 238, base weakly bilobed ; eighth abdominal sternum and tergum as in Text-fig. 237.

♀. Similar to male but with strongly falcate fore wing and strongly arcuate (not nearly straight as in ♂) outer margin (see Viette, 1954 : pl. 2, fig. 8).

♀ GENITALIA with distinctive dorsal structures (Text-fig. 236) ; signum a bilobed scobinate patch.

MEASUREMENTS. A.P.R. : ♂, ♀. 5. Wing : ♂. 19.0, 17.5-20.5 mm. (6) ; ♀. 24.5, 23.5-25.0 mm. (3).

DISCUSSION. As indicated in the description, this species is subject to much individual variation in the coloration, especially of the upper surface of the wings. Particularly noticeable is the variation in the colour of the medial area on the fore wing, which may be only slightly darker than the ground of the wing, dark reddish brown, or almost completely black.

DISTRIBUTION. South, east and south-east MADAGASCAR.

MATERIAL EXAMINED. Type. Holotype ♀, S.E. MADAGASCAR, vallée du Faraony, Vohilava, 1942 (*Catala*) ; Drepanidae genitalia slide No. 508 ; in the Muséum national d'Histoire naturelle, Paris.

Other material. *Muséum national d'Histoire naturelle, Paris.* S.W. MADAGASCAR: 1 ♂, 12 km. N.E. de Sakaraha, Rés. forêt de Zombitsy, 11-13.iv.1956 (*Griveaud*). S.E. MADAGASCAR: 1 ♂, Lambomakandro, 500 m., 17.vii.1957 (*Griveaud*); 1 ♂, Midongy du Sud, forêt de Befotaka, 950 m., 3-7.iii.1959 (*Viette* and *Griveaud*). E. MADAGASCAR: 1 ♂, Maroantsetra, Ivontaka, 13.iii.1958 (*Griveaud*); 1 ♂, 6 km., N.W. Fanovano, 18-22.ii.1955 (*Griveaud* and *Vieu*); 1 ♂, route d'Ansobie, km. 26 forêt de Sandrangato, 18.xii.1954 (*Viette*); 1 ♀, route de Lakato, km. 15 Ankasoka, 1,100 m., 2-10.i.1959 (*Viette*). *British Museum (Natural History).* E. MADAGASCAR: 1 ♀, Périnet, ii.1935 (*Olsoufieff*). *Institut scientifique, Madagascar.* S.W. MADAGASCAR: 2 ♂, Sakaraha, Zombitsy, 11, 12.iv.1956 (*Griveaud*).

## DREPANINAE

### *Callidrepana* Felder

(Text-figs. 240-252; Pl. 16, figs. 334-337; Map 7)

*Callidrepana* Felder, 1861: 30. Type-species, by monotypy, *Callidrepana saucia* Felder, 1861 [= *Callidrepana argenteola* (Moore), 1858: 360].

*Callidrepana* Felder; Gaede 1931: 34.

*Damna* Walker, 1863: 1570. Type-species, by monotypy, *Damna gelidata* Walker, 1863.

*Ausaris* Walker, 1863: 1632. Type-species, by monotypy, *Ausaris scintillata* Walker, 1863.

*Drepanulides* Motschulsky, 1866: 192. Type-species, by subsequent designation, (Inoue, 1962)

*Drepanulides palleolus* Motschulsky, 1866: 193.

*Ticilia* Walker, 1865: 394. Type-species, by monotypy, *Ticilia argentilinea* Walker, 1865.

*Drepanulina* Gaede, 1927 b: 287 [nom. nov. for *Drepanula* Gaede 1914: 65; preoccupied by *Drepanula* Frölich, 1828: 11 (Lep.)]. Type-species, by monotypy, *Drepanula argyroabapta* Gaede, 1914. **syn. n.**

In the following pages two new African species, *serena* and *macnultyi*, are described and added to the list of species in *Callidrepana*. These, together with *argyroabapta* (previously placed in *Drepanula*) are the first African species to be ascribed to *Callidrepana*.

The presence of this genus in the Ethiopian Region is of particular zoogeographical interest as it is the sole representative there of the subfamily Drepaninae.

The three African species are probably most closely related to *nana* Warren, *gelidata* Walker and *splendens* Warren, which are all Malayan or Indonesian species. They share with the rest of the genus the same basic colour-pattern formed partly by lustrous, silvery scales. There are also several characters in the male genitalia common to the African and non-African species.

### *Callidrepana argyroabapta* (Gaede) **comb. n.**

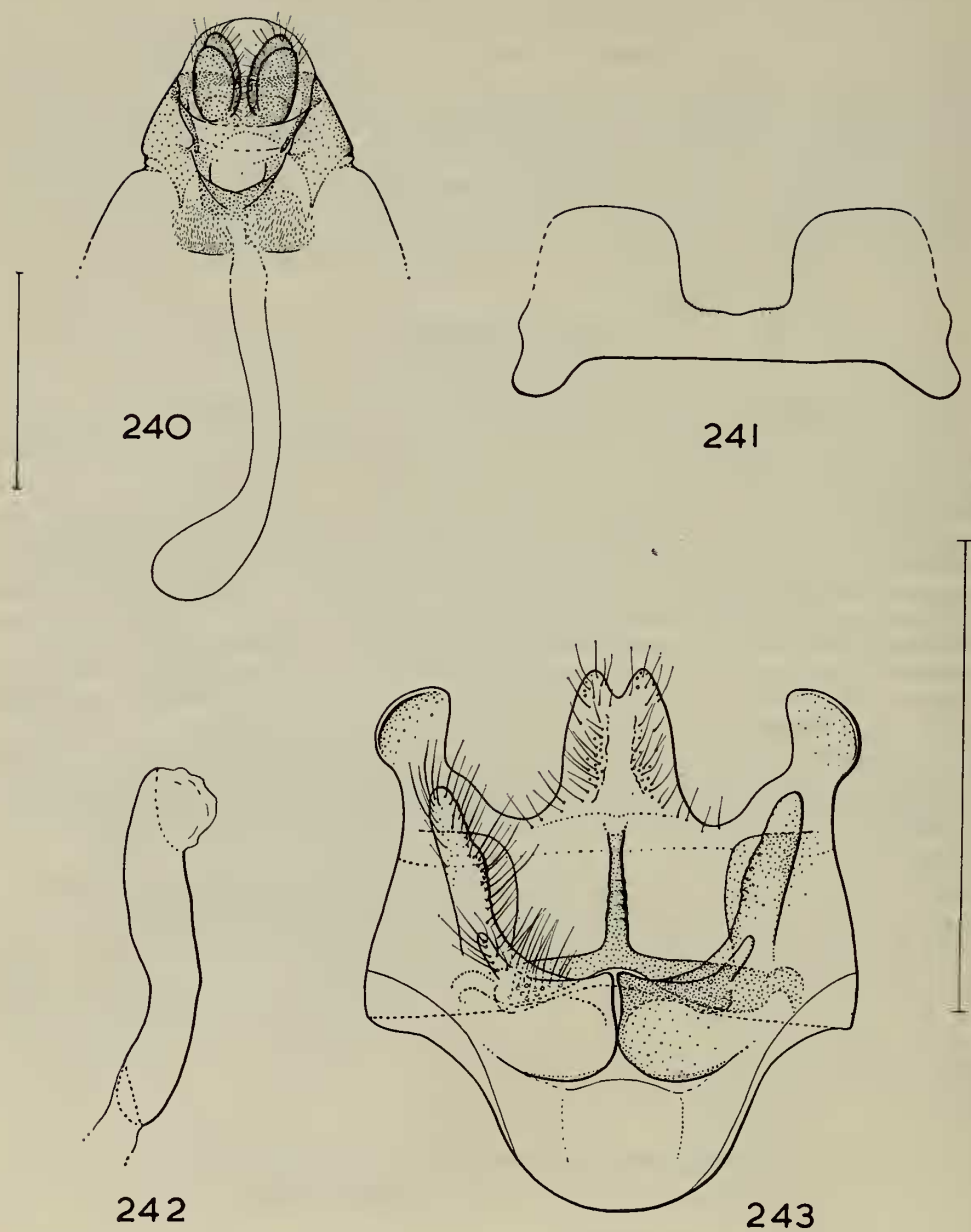
(Text-figs. 241-243; Pl. 16, fig. 336; Map 7)

*Drepanula argyroabapta* Gaede, 1914: 65.

*Drepanulina argyroabapta* (Gaede) in Seitz, 1927 b: 14. [Poor fig.]

*Drepanulina argyroabapta* (Gaede), 1931: 50.

DESCRIPTION. ♂. Outer surface of palp brown, inner surface pale greyish buff. Colour of head and antenna doubtful, probably greyish brown. Antenna bipectinate.



FIGS. 240-243, *Callidrepana*, genitalia. 240, *serena serena*, ♀. 241-243, *argyrobapta*.  
241, ♂ eighth abdominal sternite ; 242, aedeagus ; 243, ♂.

Thorax and legs of type nearly devoid of scales, probably similar in colour to corresponding surface of wings. Shape and colour-pattern of wings as in Plate 16, fig. 336. Venation of both wings as for *serena*, but  $R_4$  fuses with  $R_{2+3}$  just proximal to branching of  $R_2$  from stalk. Ground-colour of both wings pale brownish grey; markings brownish grey. Lustrous scales forming line just below costa on fore wing; scattered at apex, on cell-spots, apical streak, antemedial fascia and anterior half of wing; and forming line along distal border of postmedial fascia. Lustrous scales also present on hind wing on posterior part of antemedial fascia and along distal border of postmedial fascia. Fringe of both wings brown. Underside of both wings lilac-grey, without markings.

Colour of abdomen doubtful.

♂ GENITALIA as in Text-figs. 241–243. Valve with small, digitate, ventral lobe at base. (Aedeagus drawn from side; ventral view similar to Text-fig. 248 of *serena nigeriensis*.)

♀. Not known to me. Gaede listed 1 ♂ and 1 ♀ in his original description, but I was not able to find the female at Berlin.

MEASUREMENTS. A.P.R.: ♂. Not known. (Neither antenna complete.) Wing: ♂ 11.5 mm. (1).

DISCUSSION. This species is separated from both *serena* and *macnultyi* by the straight, uniformly marked postmedial fascia on both wings (Plate fig. 336), and by the position of this fascia well away from the outer margin on the hind wing. The presence of a small, digitate lobe at the base of the valve and the broader processes of the tegumen distinguish the male genitalia from those of *serena*, the species probably most closely related to *argyroabapta*.

MATERIAL EXAMINED. Type. I have selected and labelled as LECTOTYPE the male syntype: lectotype ♂, SÜD-KAMERUN, Lolodorf, *Erich Konrad* S.G.; Drepanidae genitalia slide No. 1229; B.M. negative No. 31121; in the Zoologisches Museum, Berlin.

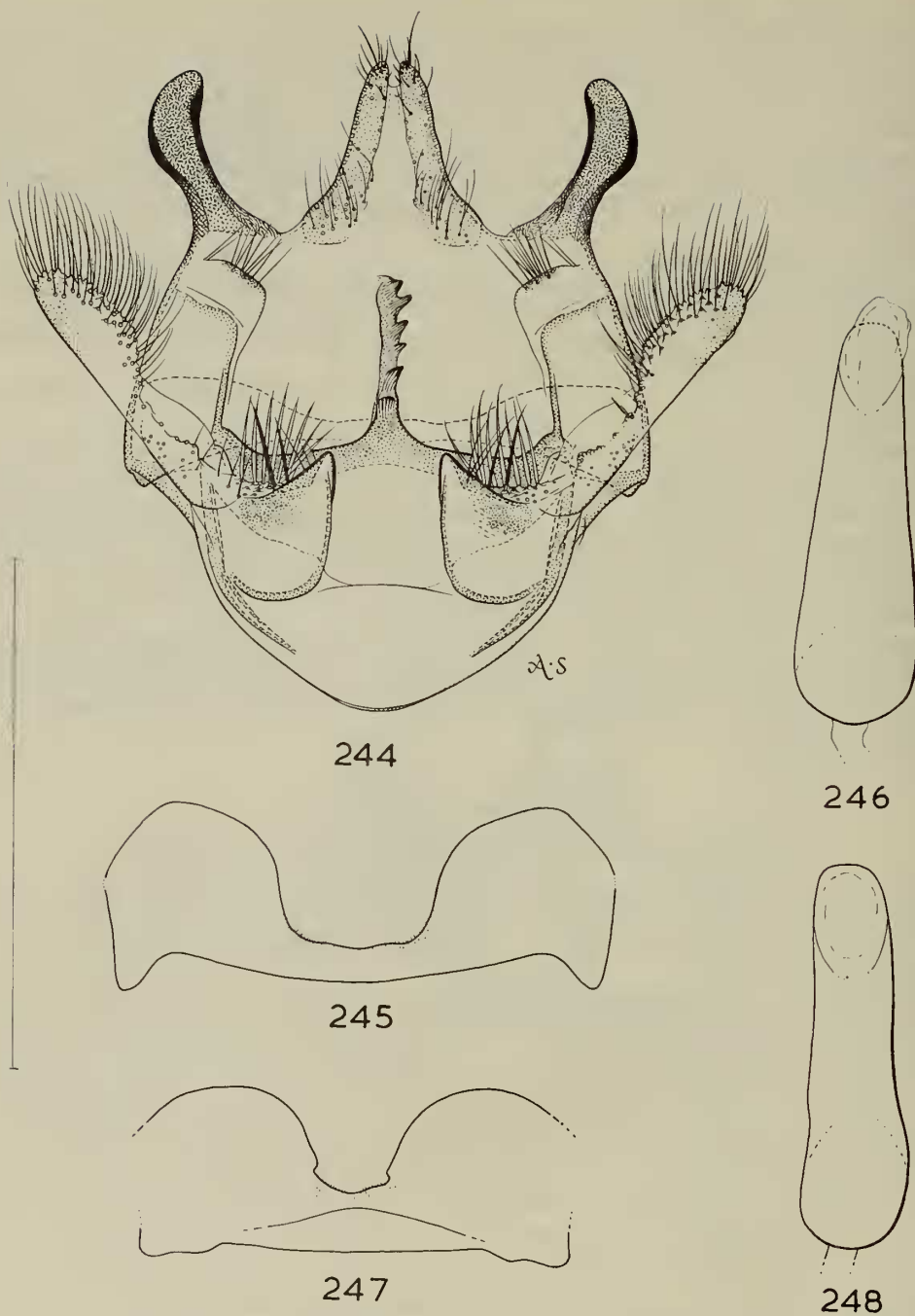
### *Callidrepana serena* sp. n.

(Text-figs. 240, 244–248; Pl. 16, figs. 337, 338; Map 7)

DESCRIPTION. ♂. Terminal segment of palp very dark brown; rest of palp brown on outer surface, pale buff on inner surface. Front of head brown, paler towards labrum; vertex similarly coloured but brilliantly lustrous. Upper surface of antennal shaft brown proximally, buff distally.

Collar reddish buff; rest of thorax brownish white. Outer surface of fore tibia and tarsus greyish brown; remaining legs and rest of fore legs brownish white. Venation:  $R_1$  and stalk of  $R_{2+3}$  arise close together from near end of cell; shortly after branching from  $R_2$  vein  $R_3$  fuses with  $R_4$  for variable distance to form areole; in the hind wing  $Sc + R_1$  anastomoses with  $R_s$  for short distance distal to end of cell. Shape and colour-pattern of wings as in Plate 16, figs. 337, 338. Ground-colour of both wings pale buff but in some specimens (not holotype) area between antemedial and postmedial fascia dark brown in posterior three-quarters of fore wing and in posterior half of hind wing. Costa very dark brown at base, remainder pale brown. Upper surface with line of lustrous scales immediately posterior to costa from base to near apex; second line along middle of cell from base of wing; antemedial fascia double, not developed anterior to cell, proximal line brown and lustrous, distal line pale brown, faintly marked; irregular marking at distal end of cell, brown or dark brown (holotype), lustrous except at periphery; irregular, lustrous, brown marking between apex and cell; postmedial fascia double; pale brown proximal line hardly discernible, darker distal line lustrous with black spots on veins, expanded at apex; fringe very dark brown at apex, brown tipped with dark brown posteriorly except at tornus. Upper surface of hind wing with trace of non-lustrous antemedial fascia;





FIGS. 244-248, *Callidrepana*, ♂ genitalia. 244-266, *serena serena*. 244, ♂; 245, eighth abdominal sternite; 246, aedeagus. 247-248, *serena nigeriensis*. 247, eighth abdominal sternite; 248, aedeagus.

postmedial fascia double, similar in colour to that of fore wing ; fringe brown. Under surface of both wings pale brownish buff. Fore wing with trace of single, oblique line from near apex to about two-thirds of distance along inner margin from base (this line does not correspond in position with either line of postmedial fascia on upper surface). Hind wing with trace of single postmedial line (corresponding in position with distal line of postmedial fascia on upper surface).

Abdomen brownish white.

♂ GENITALIA (Text-figs. 244-248) : processes of tegumen well sclerotized ; gnathus T-shaped, medial part dentate ; valve without digitate basal process ; aedeagus tapered towards apex ; posterior margin of eighth abdominal sternum emarginate medially.

♀. Similar to male but fore wing usually slightly more strongly falcate. The GENITALIA are figured in Text-fig. 240.

MEASUREMENTS. A.P.R. : ♂. 17 ; ♀. Not known (no complete antenna, but probably same ratio as ♂).

DISCUSSION. The closest relative of this species is probably *argyrobapta*. In *serena* the processes of the tegumen are more slender than in *argyrobapta* and there is no digitate process at the base of the valve. Externally the shape and position of the postmedial fascia on both fore and hind wings separate the two species.

Individual variation is present in the coloration of the marking at the end of the cell on the fore wing and of that part of both wings between the postmedial and antemedial fascia (see description). There were two males and two females of the dark-banded form in the material examined, all in the nominate subspecies.

DISTRIBUTION (Map 7). The subspecies *nigeriensis* occurs in NIGERIA and probably in SIERRA LEONE (see discussion of subspecies) and the nominate subspecies in CAMEROUN, CENTRAL AFRICAN REPUBLIC and the CONGO.

MATERIAL EXAMINED. Type. Holotype ♂, CONGO, Lusambo, 30.vii.1949 (*Fontaine*) ; Drepanidae genitalia slide No. 1212 ; in the Musée Royal de l'Afrique centrale, Tervuren.

Other material. (See below, under subspecies.)

### *Callidrepana serena serena* ssp. n.

(Text-figs. 240, 244-246 ; Pl. 16, fig. 338 ; Map 7)

DIAGNOSIS. ♂. Separable from *nigeriensis* apparently only by the genitalia : the posterior margin of the eighth sternum has a broader emargination and the aedeagus is more distinctly swollen at the base (Text-figs. 244-246).

♀. As for male. GENITALIA as in Text-fig. 240.

MEASUREMENTS. Wing : ♂. 11.5, 10.5-14.0 mm. (20) ; ♀. 14.0, 13.5-15.0 mm. (5).

DISTRIBUTION. Known from CAMEROUN, CENTRAL AFRICAN REPUBLIC and the CONGO.

MATERIAL EXAMINED. Type. (See species description.)

Paratypes. Musée Royal de l'Afrique centrale, Tervuren. CONGO : 2 ♂, Lusambo, 20.vi, 3.vii.1949 (*Fontaine*) ; 1 ♂, Tshuapa, Flandria, 20.xii.1947 (*Hulstaert*) ; 1 ♂, Sankuru, Katako-Kombe, 16.xi.1951, (*Fontaine*) ; 1 ♀, Uele, Paulis, 5.i.1958 (*Fontaine*). Institut d'Enseignement et de Recherches tropicales, Bondy. CENTRAL AFRICAN REPUBLIC : 10 ♂, 2 ♀, Boukoko M'baiki, 6-21.xi,

4-14.xii.1949 (*Réal*). *British Museum (Natural History)*. CAMEROUN : 1 ♂, Bitje, Ja River, 2,000 ft., x-xi.1912. CONGO : 1 ♂, Yakusu (*Smith*). CENTRAL AFRICAN REPUBLIC : 2 ♂, 2 ♀, Boukoko M'baiki, 6,10.xii.1949, 6,10.xii.1959 (*Réal*). *Coryndon Museum, Nairobi*. CONGO : 1 ♂, Orientale, Opala, Lomami River, iii.1959 (*Carcasson*). *Muséum d'Histoire naturelle, Geneva*. CONGO : 2 ♂, Mt. Katanga, Panda, 26,28.ii.1930 (*Romieux*).

Other material. Two females from Efulen and Lolodorf (CAMEROUN), in the Carnegie Museum, Pittsburgh, probably also represent this subspecies.

***Callidrepana serena nigeriensis* ssp. n.**

(Text-figs. 247, 248 ; Pl. 16, 337 ; Map 7)

DIAGNOSIS. ♂. The small posterior emargination of the eighth abdominal sternum and the weakly tapered aedeagus separate this from the nominate subspecies. The two subspecies are apparently not distinguishable externally.

♀. Not known.

MEASUREMENTS. Wing : ♂. 11.5, 11.0-12.0 mm. (4).

DISTRIBUTION. Known with certainty only from NIGERIA. There are female specimens from SIERRA LEONE in the British Museum (Natural History) which will probably prove to belong to this subspecies when male material becomes available for comparison.

MATERIAL EXAMINED. Type. Holotype ♂, NIGERIA, Port Harcourt, 16.i.1955 (*MacNulty*) ; Drepanidae genitalia slide No. 1232 ; in the British Museum (Natural History).

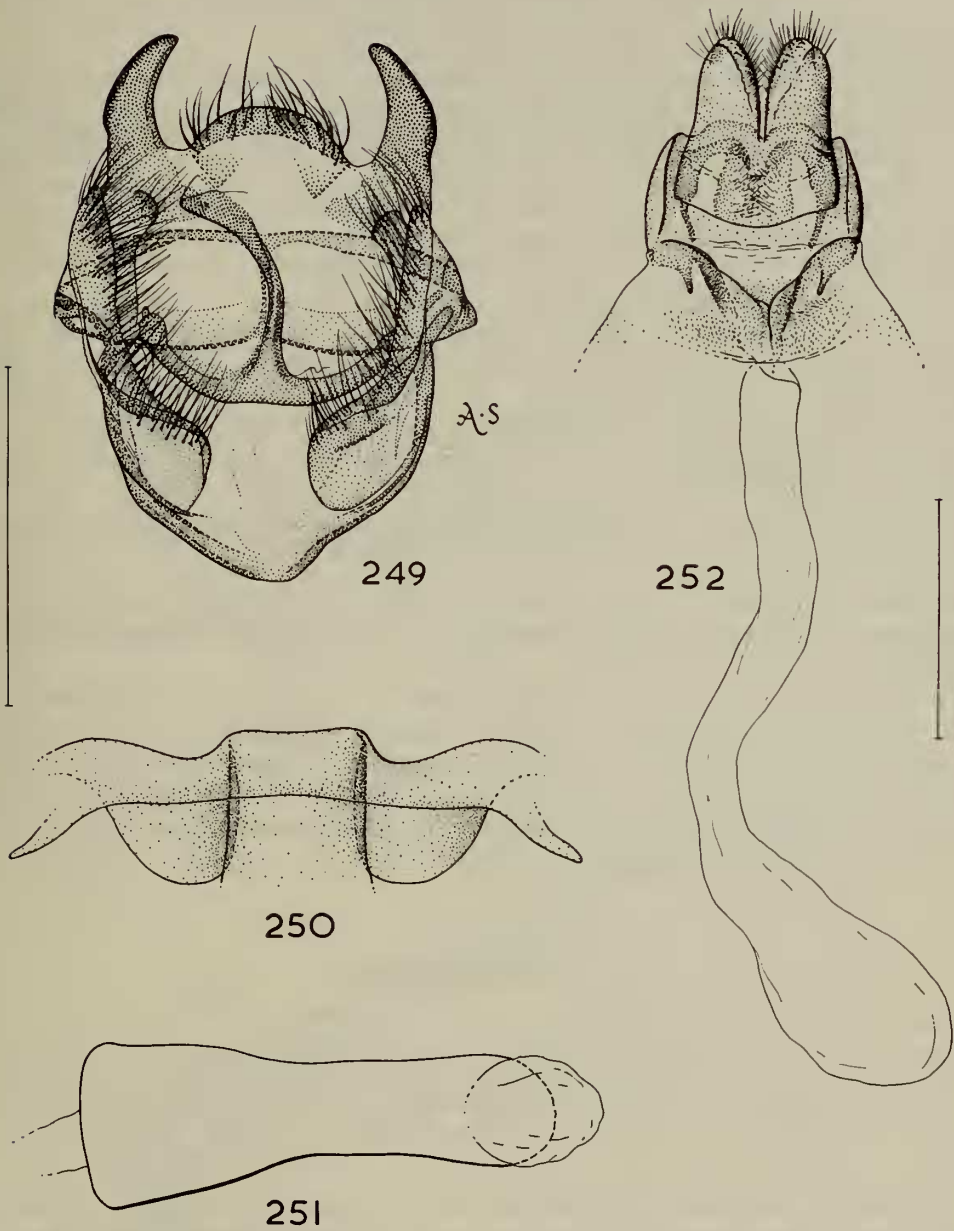
Paratypes. British Museum (Natural History). NIGERIA : 2 ♂, Port Harcourt, 16, 30.i.1955 (*MacNulty*) ; 1 ♂, Ogruga.

***Callidrepana macnultyi* sp. n.**

(Text-figs. 249-252 ; Pl. 16, figs. 334, 335 ; Map 7)

DESCRIPTION. ♂. Outer surface of palp very dark brown. Front of head brown, paler towards labrum, vertex paler brown, highly lustrous. Upper surface of basal segments of antennal shaft brown, remainder very pale brown.

Dorsal surface of thorax brownish white, palest anteriorly ; ventral surface as for colour of anterior margin of dorsal surface. Front surface of whole of fore leg brown ; remaining legs and inner surface of fore leg brownish white. Outer margin of fore wing slightly convex (holotype) or straight, costa strongly arcuate at base ; posterior half of outer margin of hind wing usually slightly convex (including holotype) (Plate 16, fig. 334). Venation of fore wing as for *serena*, except in holotype which has no areole and only four radial veins at the wing margin due to complete anastomosis of  $R_2$  and  $R_3$  or the loss of the distal part of  $R_3$  ;  $Sc + R_1$  in the hind wing anastomoses with  $R_5$  for short distance distal to end of cell. Ground-colour of upper surface of both wings pale greyish buff ; but in one Nigerian specimen this is replaced by very dark brown near anal margin of fore wing and in posterior half of hind wing between distal line of antemedial fascia and proximal line of postmedial fascia. Fore wing markings brown. Proximal line of antemedial fascia, distal line of postmedial fascia, brown streak extending towards apex from cell, and brown apical patch all highly lustrous ; line of highly lustrous scales concolorous with ground-colour below whole of costa and in cell from base to cell-spots ; cell-spots non-lustrous ; fringe dark brown at apex, remainder pale brown. Colour of hind wing markings as for fore wing ;



FIGS. 249-252, *Callidrepana macnultyi*, genitalia. 249, ♂; 250, ♂ eighth abdominal sternite; 251, aedeagus; 252, ♀.



distal line of postmedial fascia highly lustrous ; some highly lustrous scales on vestige of proximal line of antemedial fascia ; fringe brown. Under surface of both wings very pale greyish buff with trace of grey postmedial fascia on fore wing (not corresponding in position with this fascia on upper surface) and hind wing (position as for upper surface).

Abdomen pale greyish buff dorsally, paler ventrally.

♂ GENITALIA (Text-figs. 249-251) : processes of tegumen heavily sclerotized ; medial part of gnathus not dentate ; valve without basal process ; uncus short, evenly convex ; aedeagus swollen proximally, slightly asymmetric ; eighth abdominal sternum distinctively shaped.

♀. Similar to male but with slightly concave outer margin to fore wing and differently shaped costa (Plate 16, fig. 335).

♀ GENITALIA (Text-fig. 252) : posterior margin of ostial segment emarginate dorsally, concave laterally ; ovipositor lobes robust, both pairs of apophyses short.

MEASUREMENTS. A.P.R. : ♂. 17 ; ♀. (No complete antenna.) Wing : ♂. 11.0, 10.5-12.0 mm. (8) ; ♀. 14.5, 14.0-15.0 mm. (2).

DISCUSSION. The shape of the fore wing costa and the outer margin of the hind wing (see Plate) separates this species from *serena* and *argyrobapta*, both of which are quite closely related to *macnultyi*. The short uncus, the non-dentate gnathus and the distinctive eighth abdominal sternum characterize the male genitalia.

Individual variation in the coloration of the upper surface of the wings has been described above.

DISTRIBUTION (Map 7). Ranges from NIGERIA to the CONGO, with no apparent geographic variation.

MATERIAL EXAMINED. Type. Holotype ♂, NIGERIA, Port Harcourt, 15.viii.1957 (*MacNulty*) ; Drepanidae genitalia slide No. 1231 ; in the British Museum (Natural History).

Paratypes : *British Museum (Natural History)*. NIGERIA : 2 ♂, Port Harcourt, 11.v, 17.viii.1958 (*MacNulty*). CENTRAL AFRICAN REPUBLIC : 2 ♂, Boukoko, 13.xii.1959 (*Réal*). CONGO : 1 ♀, Kassai (*Raymans*). *Institut d'Enseignement et de Recherches tropicales, Bondy*. CENTRAL AFRICAN REPUBLIC : 2 ♂, Boukoko M'baiki, 14.xii.1949, 7.ii.1959 (*Réal*). *Musée Royal de l'Afrique centrale, Tervuren*. CONGO : 1 ♀, Eale, vii.1936 (*Ghesquière*) ; 1 ♀, Kibale, Mount Hoyo, 23.xii.1956 (*Hecq*).

### NIDARINAE subfam. n.

Type-genus : *Nidara* Mabilie, 1897.

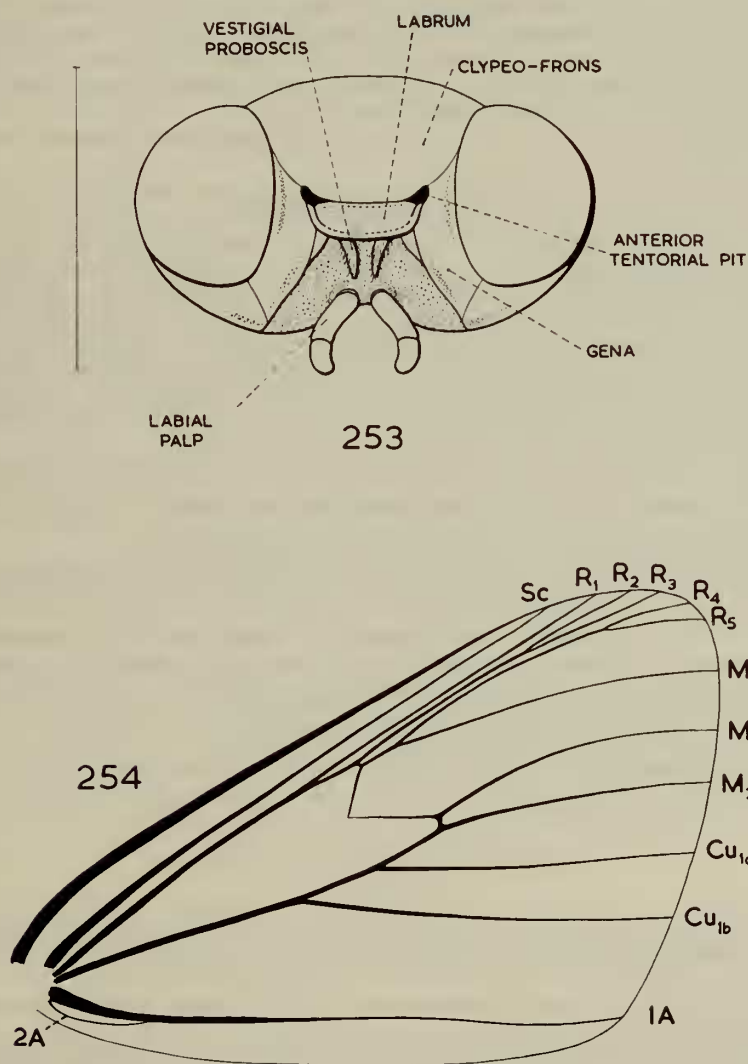
DESCRIPTION. ♂, ♀. Palp short, slender ; proboscis vestigial ; gena large ; labrum broad transversely ; antenna unipectinate, A.P.R. high. (See Text-fig. 253.) Outer margin of both fore and hind wings entire ; fore wing not falcate. Retinaculum and short frenulum present in male. Fore tibia without epiphysis. Mid and hind tibia without spurs. Genitalia : see *Nidara*.

DISCUSSION. The subfamily Nidarinae has been erected for *Nidara* Mabilie, a Madagascan genus known only from the imago. It can be distinguished from all other known genera of the two existing subfamilies, Drepaninae and Oretinae, by the absence of an epiphysis on the fore tibia and the absence of spurs on either the mid or hind tibia. *Nidara* possesses a vestigial proboscis, as in the Oretinae

(proboscis well developed in all Drepaninae), but has a frenulum in the male fore wing as in the Drepaninae (absent in all Oretinae).

In external appearance the species of this subfamily resemble Drepaninae more closely than Oretinae. The species *Nidara marcus* has extremely long antennal pectinations and is distinctly "Lymantrid" in appearance. All the known species of *Nidara* bear a superficial resemblance to certain species of *Pseudocrocini* Swinhoe (Geometridae : Ennominae) which like *Nidara* is endemic to Madagascar.

DISTRIBUTION. Known only from MADAGASCAR.



FIGS. 253-254, *Nidara multiversa*. 253, ventral view of ♂ head. 254, ♂ fore wing venation.

**NIDARA** Mabilles

(Text-figs. 253-270 ; Pl. 17, fig. 340, Pl. 18, figs. 343-348)

*Nidara* Mabilles, 1897 : 222. Type-species, by monotypy, *Nidara croceina* Mabilles, 1897.*Nidara* Mabilles ; Gaede in Seitz, 1927 b : 292.*Nidara* Mabilles ; Gaede, 1931 : 52.

DESCRIPTION. ♂. Head, palp and antenna yellow, orange, or dark brown ; antenna unipennate, A.P.R. 21-45.

Thorax yellow or orange, legs yellow or orange, sometimes with dark brown front surface. Costa of fore wing slightly convex ; outer margin of both wings convex, entire. Venation of fore wing as in Text-fig. 254 ; hind wing with  $Sc + R_1$  anastomosed with  $R_s$  for short distance distal to end of cell. Ground-colour of both wings yellow or orange, non-lustrous. Upper surface of wings with dark brown markings in three species, and white spot or spots at the end of the cell in all except *calligola*. Under surface of both wings paler than upper surface ; markings usually reduced in extent and clarity. (See Plates 17 and 18.)

Abdomen similar in colour to ground-colour of upper surface of wings dorsally and laterally ; much paler ventrally.

♂ GENITALIA (see labelled Text-fig. 267) : uncus simple, toothed posteriorly in *marcus* ; tegumen narrow transversely ; saccus strongly developed, with flat lateral continuations into intersegmental membrane ; valve robust, variously shaped ; valves united medially at base ; diaphragma membranous posteriorly, somewhat dilated ; aedeagus variously shaped ; apodemes of eighth sternum short, long posterior processes present in *pumilla*, *calligola* and *multiversa* (extremely attenuate and reflexed in latter).

♀ (known only from one specimen of *calligola* and one specimen of *multiversa*). Similar to male.

♀ GENITALIA : ostium shielded ventrally by paired acuminate processes of eighth segment ; ninth tergum forming large hood-like structure over ovipositor valves ; bursa copulatrix with pair of scobinate, externally concave signa.

DISCUSSION. *Nidara*, the only known genus of the subfamily Nidarinae, was established by Mabilles, 1897, for a single new species *croceina*. In the present work four new species are described, all of them from Madagascar.

As the male of *croceina* is not known and the females of only *calligola* and *multiversa* have so far been taken, it is difficult to assess relationships within the genus. The absence of long, posterior, eighth sternal processes, and the peculiarly shaped aedeagus of *marcus* separates it from those remaining species whose males are known.

The most striking morphological feature in the genitalia is the pair of extremely elongate, reflexed, eighth sternal processes in *multiversa*.

The species *calligola* and *marcus* are polymorphic in wing pattern and coloration.

DISTRIBUTION. MADAGASCAR.

KEY TO SPECIES (except *croceina*)

## MALES

The male of *croceina* is not known. The female has yellow wings without striations but has two white spots distal at the end of the cell on the upper surface of the fore wing.

- 1 Ground-colour of both surfaces of wings orange ; dark brownish grey terminal band present at outer margin of both surfaces of both wings (sometimes absent on upper surface of fore wing) (Plate 18, figs. 343, 344) ; A.P.R. 24 ; uncus and valve distinctive (Text-fig. 257) ; aedeagus without longitudinal carinae (Text-fig. 258) ; forcipulate eighth sternal processes setose apically (Text-fig. 259) *calligola* (p. 159)

- Ground-colour of wings yellow, without conspicuous terminal band ; A.P.R. 21, 27 or 45 ; uncus and valve not as in Text-fig. 257 ; aedeagus with longitudinal carinae or lateral bulge ; posterior processes of eighth sternum not forcipulate . . . . . 2
- 2 Dark transverse striations present on upper surface of fore wing ; A.P.R. 27 or 45 ; uncus tapered or toothed posteriorly . . . . . 3
- Upper surface of fore wing without transverse striations ; A.P.R. 27 ; uncus hood-like  
*pumilla* (p. 166)
- 3 Upper surface of fore wing with several conspicuous blackish striations anterior to cell ; one white patch in distal end of cell, two white patches distal to end of cell (Plate 18, fig. 346) ; A.P.R. 45 ; uncus toothed apically ; valves long, tapered, without processes ; aedeagus with lateral bulge, without longitudinal carina ; posterior margin of eighth sternum weakly emarginate medially (Text-figs. 261, 262) *marcus* (p. 161)
- Whole of upper surface of fore wing densely striate with dark brown, single white patch present distal to end of cell (Plate 17, fig. 340) ; A.P.R. 27 ; uncus simple, tapered ; valve shaped like a bird's head, with single curved process ; aedeagus with longitudinal carina, without lateral bulge ; posterior processes of eighth sternum extremely attenuate, reflexed (Text-figs. 265-267) . . . . . *multiversa* (p. 163)

### *Nidara calligola* sp. n.

(Text-figs. 255-259 ; Pl. 18, figs. 343, 344)

DESCRIPTION. ♂, ♀. Palp and front of head pale orange ; vertex of head and antennal scape and pedicel orange ; upper surface of rest of antennal shaft very dark brown, nearly black.

Thorax orange dorsally, very pale yellow ventrally. Front surface of legs orange, remainder slightly paler ; fore leg the most intensely coloured. Upper surface of fore wing orange with few dark brownish grey scales along apical part of costa, apex and outer margin (two ♂ paratypes, Plate 18, fig. 343), or with broad, very dark brownish grey terminal band (holotype, Plate 18, fig. 344, and ♀ paratype) ; ground-colour of hind wing as fore wing, with very dark brownish grey terminal band (tapered posteriorly in specimen illustrated in Plate 18, fig. 343 and in remaining ♂ paratype). Fringe of both wings as for dark terminal band. Ground-colour of under surface of both wings slightly paler orange than upper surface ; hind wing pattern as for upper surface ; fore wing pattern as for upper surface of holotype and ♀ paratype, but with blackish terminal band on fore wing of the two ♂ paratypes slightly narrower, and tapered posteriorly.

Abdomen orange dorsally and laterally, very pale yellow ventrally.

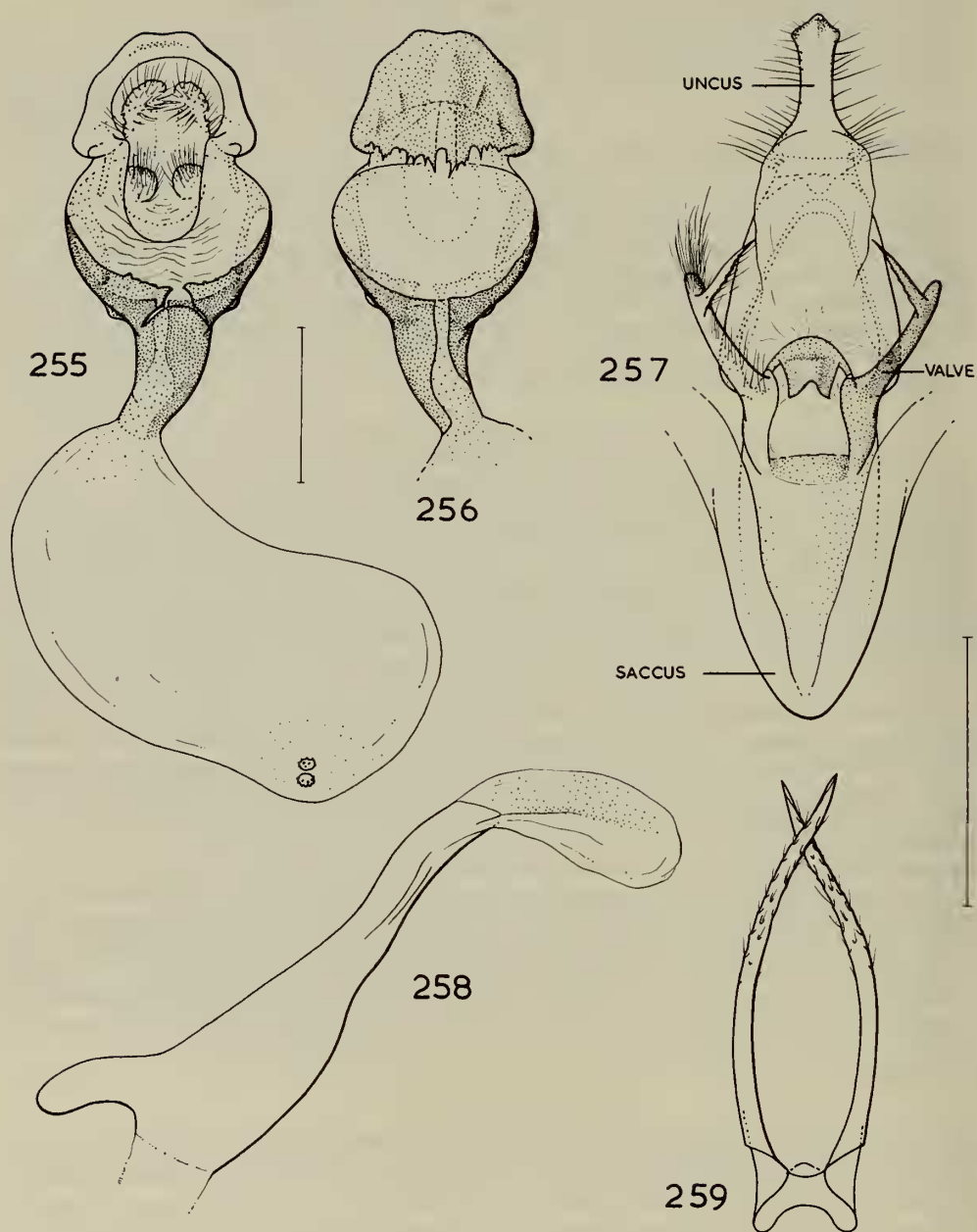
♂ GENITALIA (Text-figs. 257-259) : uncus pointed apically, with pre-apical shoulders ; saccus elongate ; valve with long, acuminate, medially directed process ; broad plate uniting base of valves ; basal half of aedeagus flattened, distal half flattened in plane at right angles to base, vesica scobinate ; eighth sternum with pair of long, acuminate, posterior processes.

♀ GENITALIA (Text-figs. 255-256) : ostium shielded laterally by flattened, toothed processes of the eighth segment ; ninth tergum hood-like, heavily sclerotized, with irregular sharply toothed posterior margin dorsally ; bursa copulatrix with pair of small, scobinate signa.

MEASUREMENTS. A.P.R. : ♂, ♀. 24. Wing : ♂. 13.5, 13.0-14.0 mm. (3) ; ♀. 18.5 mm. (1).

DISCUSSION. The colour-pattern of this colourful species is quite unlike that found in any other Drepanid : it is in fact similar to that of certain species of *Pseudocrociniis* Swinhoe (Geometridae : Ennominae). The distinctive orange and dark grey coloration, and the diagnostic colour-pattern at once distinguish this species from the rest of the genus. The male genitalia is also diagnostic. The interesting variation found in the three males available for study (see description) is illustrated on Plate 18.





FIGS. 255-259, *Nidara calligola*, genitalia. 255, ventral view of ♀; 256, dorsal view of ♀; 257, ♂; 258, aedeagus; 259, ♂ eighth abdominal sternite.

DISTRIBUTION. Known only from north-west MADAGASCAR.

MATERIAL EXAMINED. Type. Holotype ♂, MADAGASCAR, Ankarafantsika, Ampijoroa, 170 m., i.1957 (*Griveaud*) ; Drepanidae genitalia slide No. 1387 ; in the Muséum national d'Histoire naturelle, Paris.

Paratypes. *Muséum national d'Histoire naturelle, Paris.* N.W. MADAGASCAR : 1 ♀ and 2 ♂, Ankarafantsika, Ampijoroa, 120 m., 30.viii, 4.ix.1956 (*Griveaud*).

### *Nidara marcus* sp. n.

(Text-figs. 260–262 ; Pl. 18, figs. 345, 346)

DESCRIPTION. ♂. Palp yellow ; head yellow except for medial black patch short distance anterior to antennae ; antennal shaft very dark brownish grey dorsally, buff laterally.

Thorax yellow dorsally, very pale yellow ventrally. Front surface of fore tibia and tarsus black, remainder of leg yellow ; front surface of mid tarsus and base of mid tibia black, rest of leg yellow ; coloration of hind leg doubtful, probably similar to mid legs. Ground-colour of upper surface of both wings yellow ; fore wing speckled with very dark greyish brown apically ; diffusely marked antemedial fascia and postmedial fascia in holotype and one paratype (Plate 18, fig. 346), absent in remaining paratype (Plate 18, fig. 345) ; white spot inside distal end of cell absent on left wing of one paratype, second white spot close to cell between  $M_3$  and  $Cu_{1a}$ , and third white spot between  $Cu_{1a}$  and  $Cu_{1b}$  ; several very dark greyish brown striations between costa and cell ; fringe yellow ; hind wing unmarked. Under surface of both wings slightly paler yellow than upper surface ; apex of wing speckled with brown ; costal striations of upper surface show through on fore wing.

♂ GENITALIA (Text-figs. 260–262) : uncus with four posterior teeth ; saccus narrow ; valve long, tapered, with short setae along centre of inner surface ; diaphragma strongly dilated ; aedeagus with distinctive lateral bulge, vesica scobinate at base ; posterior margin of eighth sternum weakly emarginate medially, without processes.

♀. Not known.

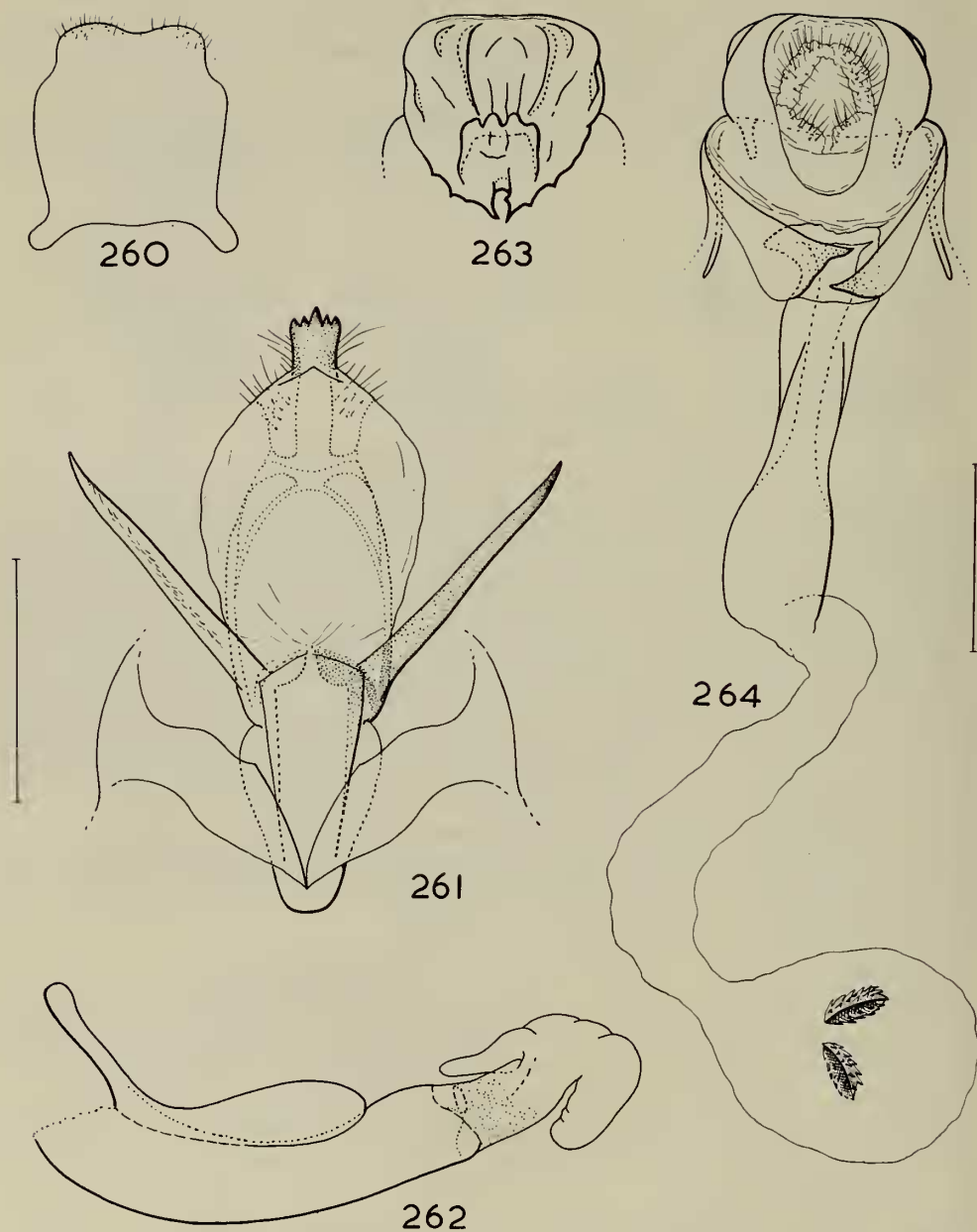
MEASUREMENTS. A.P.R. : ♂. 45. Wing : ♂. 15.0, 14.0–15.5 mm. (3).

DISCUSSION. The colour-pattern, high antennal pectination ratio and distinctive genitalia characterize this species. The species *croceina* and *multiversa* are similar in size and colour to *marcus* but have readily distinguishable colour-patterns.

This species is probably polymorphic. A diffusely marked antemedial fascia and a postmedial fasciae are present in the holotype and one paratype but are absent in the remaining paratype (see Plate 18, figs. 345, 346).

MATERIAL EXAMINED. Type. Holotype ♂, MADAGASCAR, Ambatolampy, Andranotobaka, 1,400 m., iii.1957 (*Griveaud*) ; Drepanidae genitalia slide No. 1258 ; in the Muséum national d'Histoire naturelle, Paris.

Paratypes. *Muséum national d'Histoire naturelle, Paris.* CENTRAL MADAGASCAR : 1 ♂, Ambatolampy, Andranotobaka, 1,400 m., iv.1957 (*Griveaud*) ; 1 ♂, env. Tananarive (*Vieu*).



FIGS. 260-264, *Nidara*, genitalia. 260-262, *marcus*. 260, ♂ eighth abdominal sternite ; 261, ♂ ; 262, aedeagus. 263-264, *multiversa*. 263, dorsal view of ♀ ninth abdominal segment ; 264, ventral view of ♀.

*Nidara croceina* Mabilles

(Pl. 18, fig. 347)

*Nidara croceina* Mabilles, 1897 : 222.*Nidara croceina* Mabilles ; Gaede in Seitz, 1927 b : 292.*Nidara croceina* Mabilles ; Gaede, 1931 : 52.

DESCRIPTION. ♀. Palps and head yellow ; antennal shaft yellow dorsally and laterally.

Thorax yellow dorsally, much paler ventrally. Legs entirely yellow. Upper surface of both wings (Plate 18, fig. 347) yellow ; large white spot between  $Cu_{1a}$  and  $Cu_{1b}$  and trace of second smaller white spot between  $M_3$  and  $Cu_{1a}$ , both distal to end of cell ; hind wing unmarked. Under surface of fore wing yellow, with whitish spot between  $Cu_{1a}$  and  $Cu_{1b}$  distal to end of cell ; hind wing yellow, unmarked.

Abdomen missing from lectotype.

♂. Not known.

MEASUREMENTS. A.P.R. : ♀. 21. Wing : ♀. 19.0 mm. (1).

DISCUSSION. Apart from the lack of striations on the fore wing *croceina* superficially resembles *multiversa*.

MATERIAL EXAMINED. Type. The specimen I consider to represent the type material has recently been discovered amongst some unsorted moths from the Oberthür collection in this museum. This specimen, which I have selected as LECTOTYPE, bears two labels, " Ex musaeo P. Mabilles 1923 " and " Ex Oberthür Coll. Brit. Mus. 1927-30 " ; but there is no locality label. The original material, according to Mabilles (1897 : 222), was collected in northern MADAGASCAR at Diego Suarez by Alluaud. Except for the presence of easily overlooked white spots on the fore wing this specimen matches the short original description.

*Nidara multiversa* sp. n.

(Text-figs. 253, 254, 263-267 ; Pl. 17, fig. 340)

DESCRIPTION. ♂, ♀. Palp and head buff ; dorsal and lateral surfaces of antennal shaft black.

Thorax buff dorsally, paler ventrally. Legs pale yellow. Upper surface of fore wing (Plate 17, fig. 340) yellowish buff with numerous transverse striations (very dark brown anteriorly, otherwise reddish brown) ; single white spot close to cell between  $Cu_{1a}$  and  $Cu_{1b}$  ; very faintly marked postmedial fascia in holotype and female paratype. Upper surface of hind wing yellow, with trace of transverse striations along anal margin. Under surface of both wings yellow ; fore wing speckled with grey scales apically (similar to *marcus*), and with whitish spot in same position as on upper surface ; hind wing unmarked.

Colour of abdomen as for corresponding surface of hind wing.

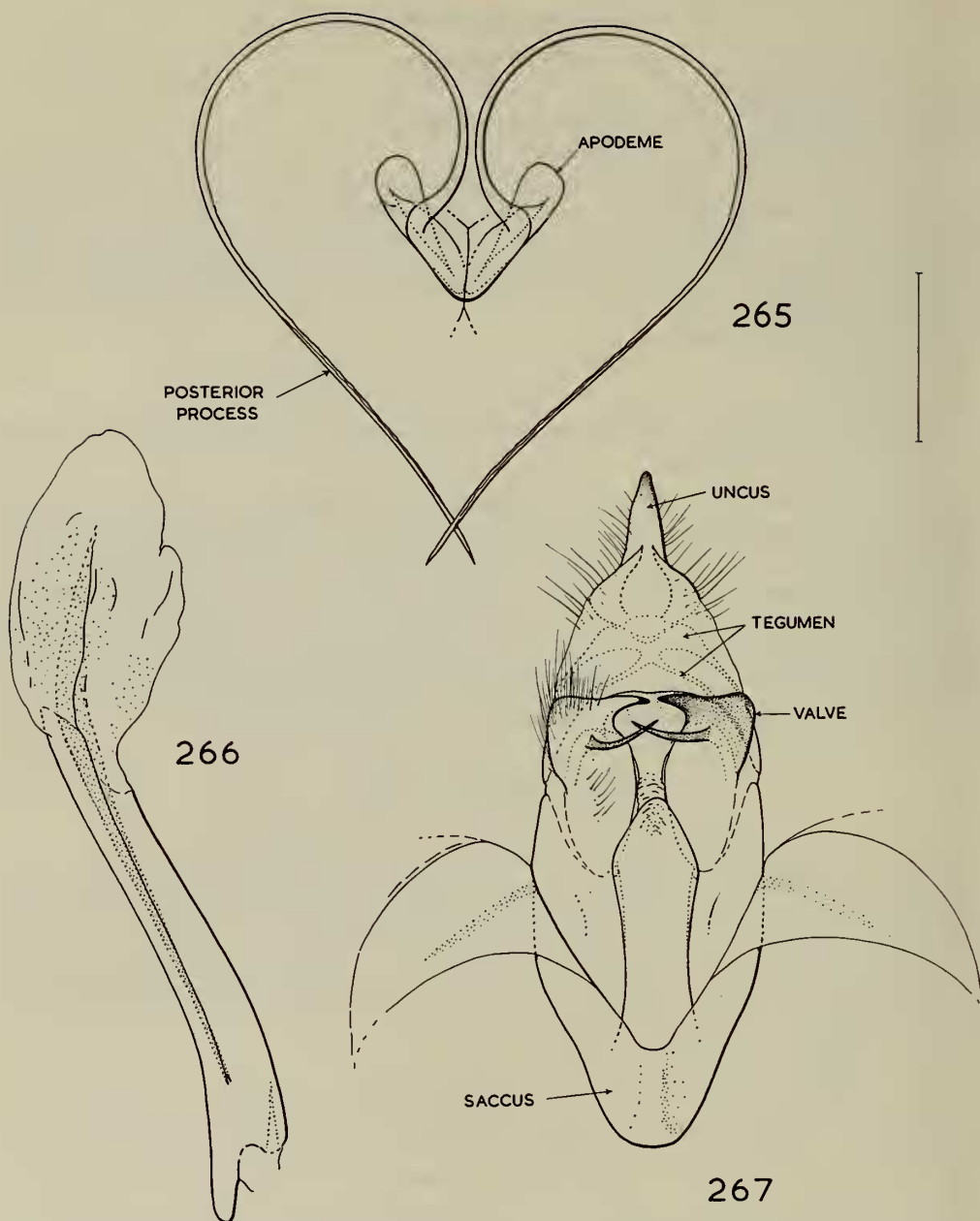
♂ GENITALIA (Text-figs. 265-267) : uncus tapered posteriorly ; valve broad, shaped like bird's head apically, with single acuminate process ; valves placed so that only small membranous area of diaphragma remains posterior to sclerotized band uniting bases of valves ; aedeagus with two longitudinal carinae placed on opposite sides of aedeagus ; eighth sternum with extremely attenuate posterior processes ; short broad apodemes of eighth sternum directed posteriorly.

♀ GENITALIA (Text-figs. 263, 264) : paired signa strongly concave externally ; acuminate processes of eighth segment ventral to ostium ; ninth segment strikingly developed dorsally.

MEASUREMENTS. A.P.R. : ♂. 27 ; ♀. 18. Wing : ♂. 17.0, 16.5-18.5 mm. (4) ; ♀. 19.0 mm. (1).

DISCUSSION. The colour-pattern of both surfaces of the fore wing of this species resembles in certain respects that of *marcus* : there are transverse striations and a





FIGS. 265-267, *Nidara multiversa*, ♂ genitalia. 265, eighth abdominal sternite ; 266, aedeagus ; 267, ♂.

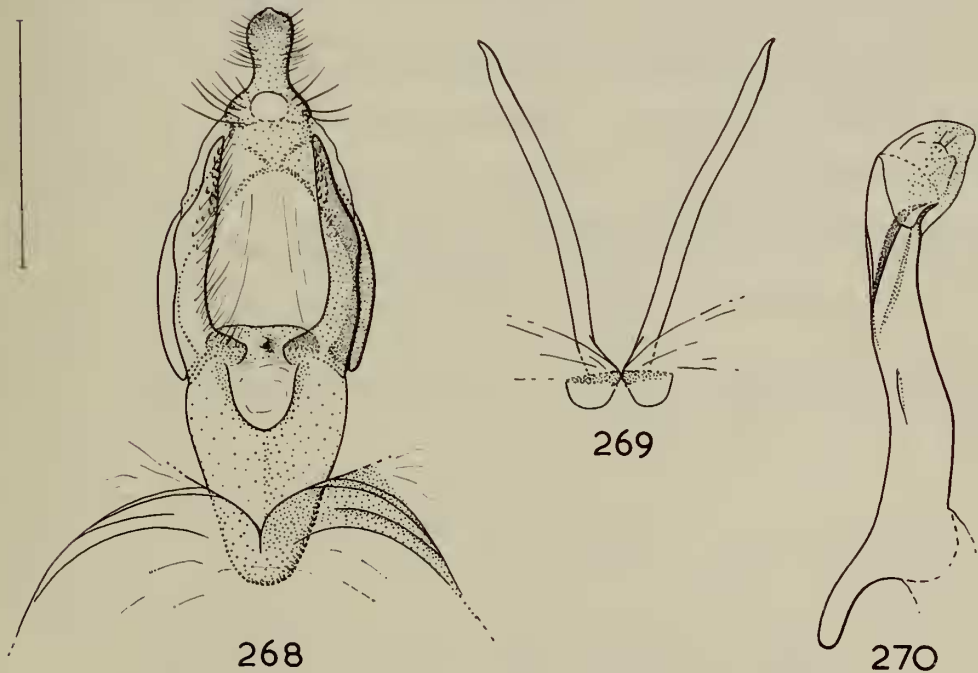
weakly marked postmedial fascia on the upper surface, and a dark apical area on the under surface. The genitalia of *marcus* and *multiversa* are, however, dissimilar and there is probably no particularly close relationship between these two species.

There is no significant individual variation in the colour-pattern of the material available for study.

The unusually long processes of the eighth abdominal sternum are the most striking feature of the male genitalia (Text-fig. 265).

**MATERIAL EXAMINED.** Type. Holotype ♂, N. MADAGASCAR, Antakares, Isokitraà, Diego Suarez, v-x.1891 (*Perrot*) ; Drepanidae genitalia slide No. 1265 ; in the British Museum (Natural History).

Paratypes. *British Museum (Natural History)*. N. MADAGASCAR : 3 ♂ and 1 ♀, same collection data as holotype.



FIGS. 268-270, *Nidara pumilla*, ♂ genitalia. 268, ♂ ; 269, eighth abdominal sternite ; 270, aedeagus.

*Nidara pumilla* sp. n.

(Text-figs. 268-270 ; Pl. 18, fig. 348)

DESCRIPTION. ♂. Palp, head and upper surface of antennal shaft yellow.

Dorsal surface of thorax yellow, paler ventrally. Colour of legs doubtful but probably mainly yellow. Both surfaces of fore wings yellow, lightly speckled with pale reddish brown ; upper surface with small whitish spot edged with brown close to cell between  $Cu_{1a}$  and  $Cu_{1b}$  ; under surface with small brown spot corresponding in position with spot on upper surface. Both surfaces of hind wing yellow. (See Plate 18, fig. 348.)

♂ GENITALIA (Text-figs. 268-270) : uncus hood-like ; valves without processes ; aedeagus with one short and two long carinae ; eighth sternum with pair of long, non-setose, acuminate, posterior processes.

♀. Not known.

MEASUREMENTS. A.P.R. : ♂. 27. Wing : ♂. 11.5 mm. (1).

DISCUSSION. This species is known at present only from the holotype, but as this specimen is in reasonably good condition and the genitalia are so distinctive I believe that description is justified. The size, colour-pattern and genitalia distinguish *pumilla* from the rest of the genus.

DISTRIBUTION. Known only from south MADAGASCAR.

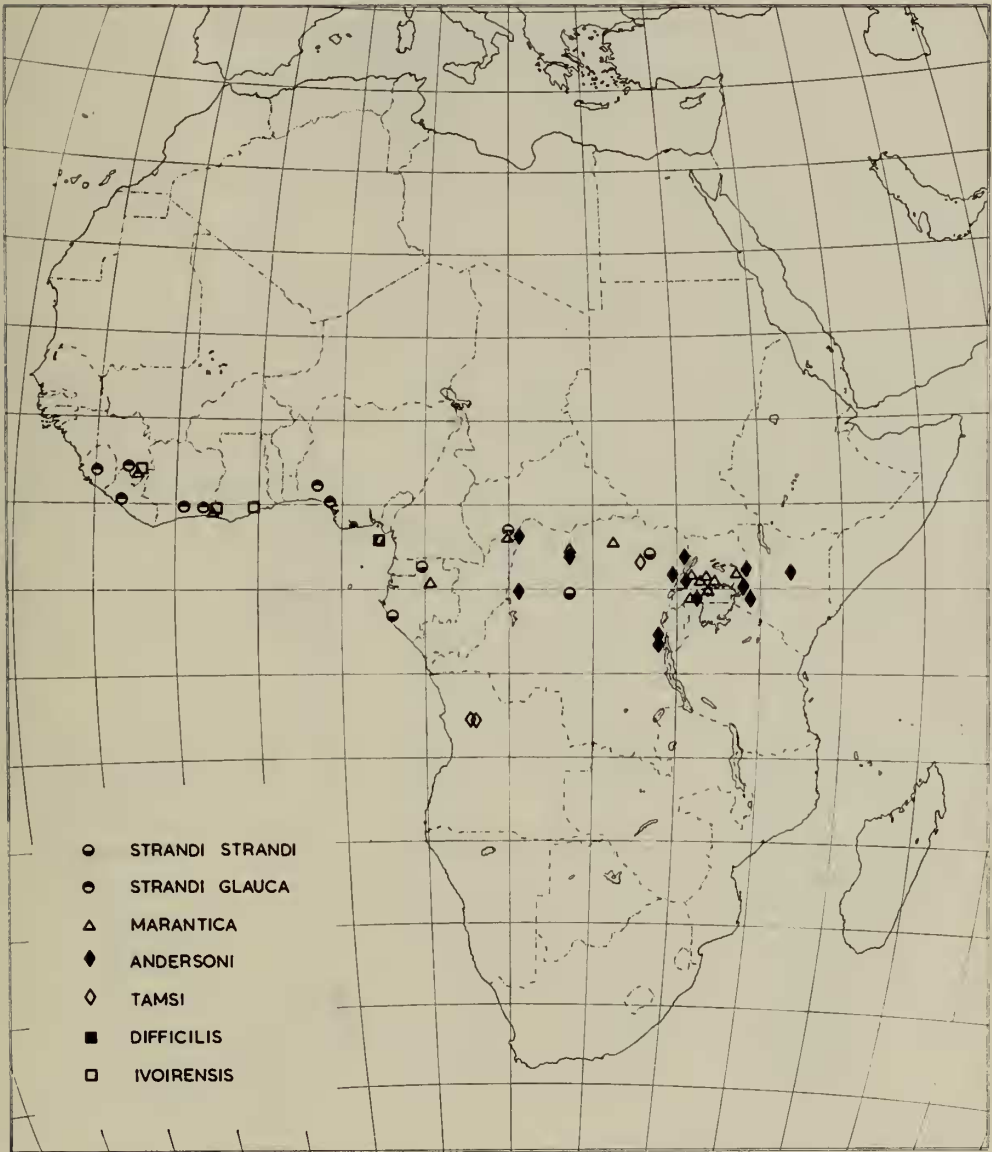
MATERIAL EXAMINED. Holotype ♂, Ambovombe, 13.i.1932 (*Decary*) ; Drepanidae genitalia slide No. 1255 ; in the Muséum national d'Histoire naturelle, Paris.

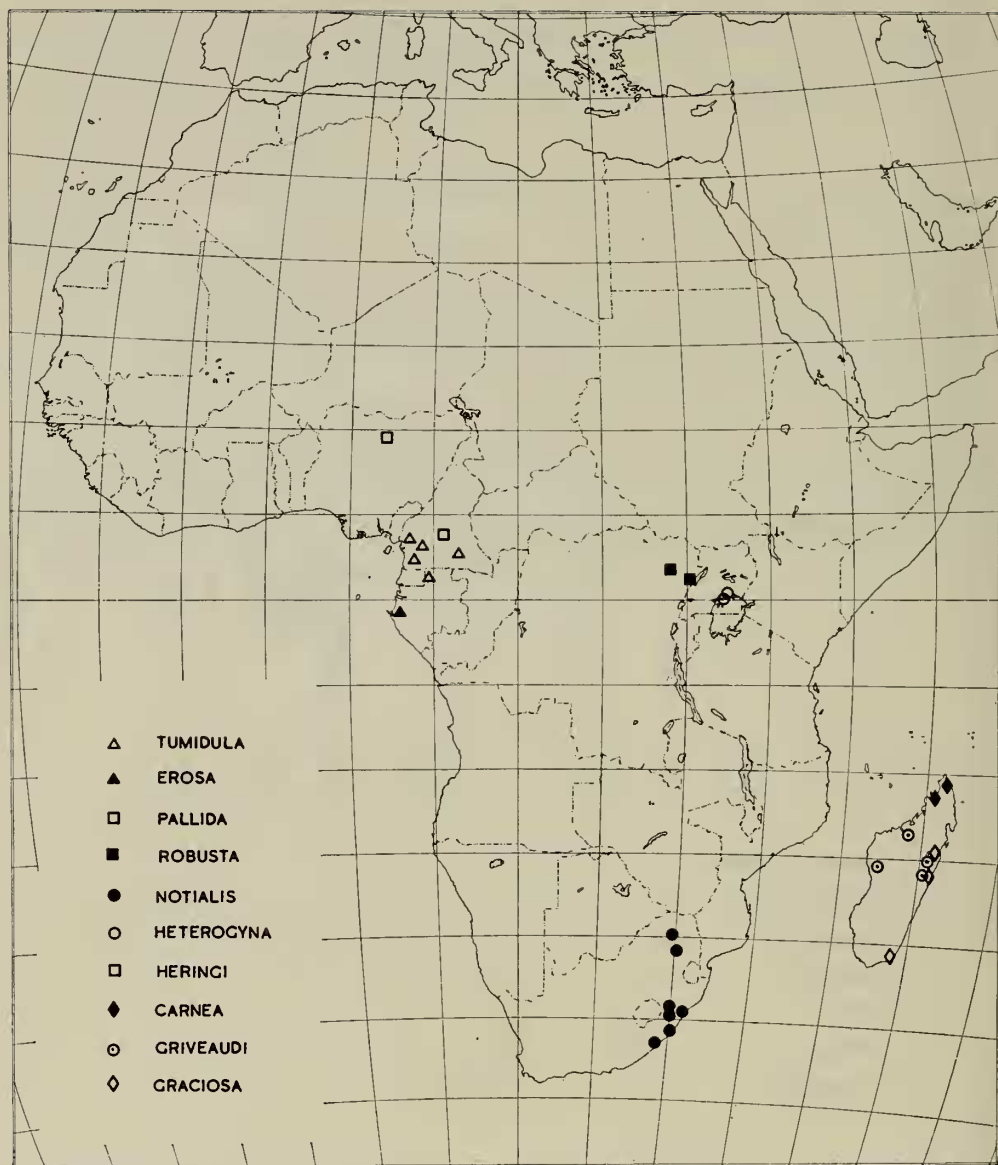
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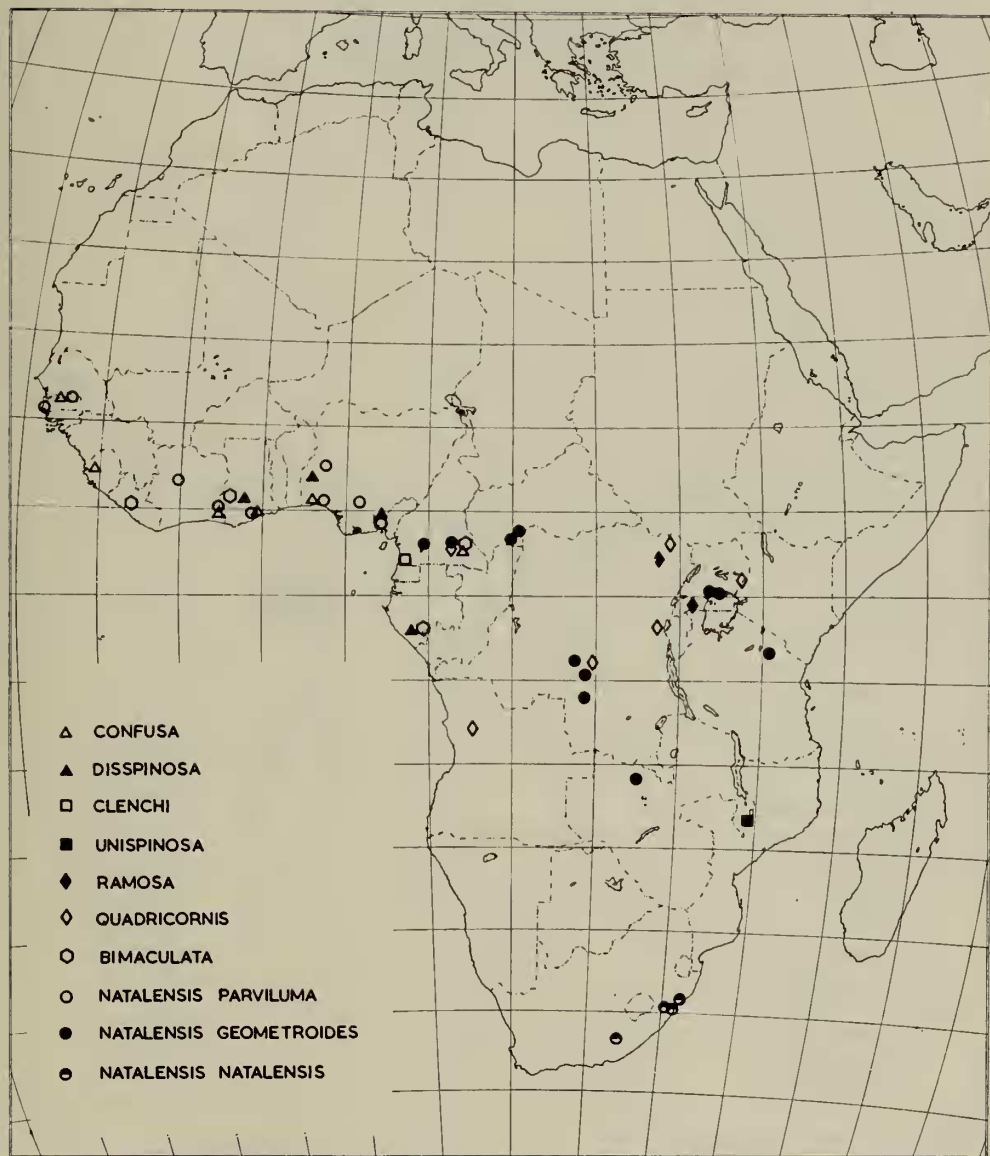


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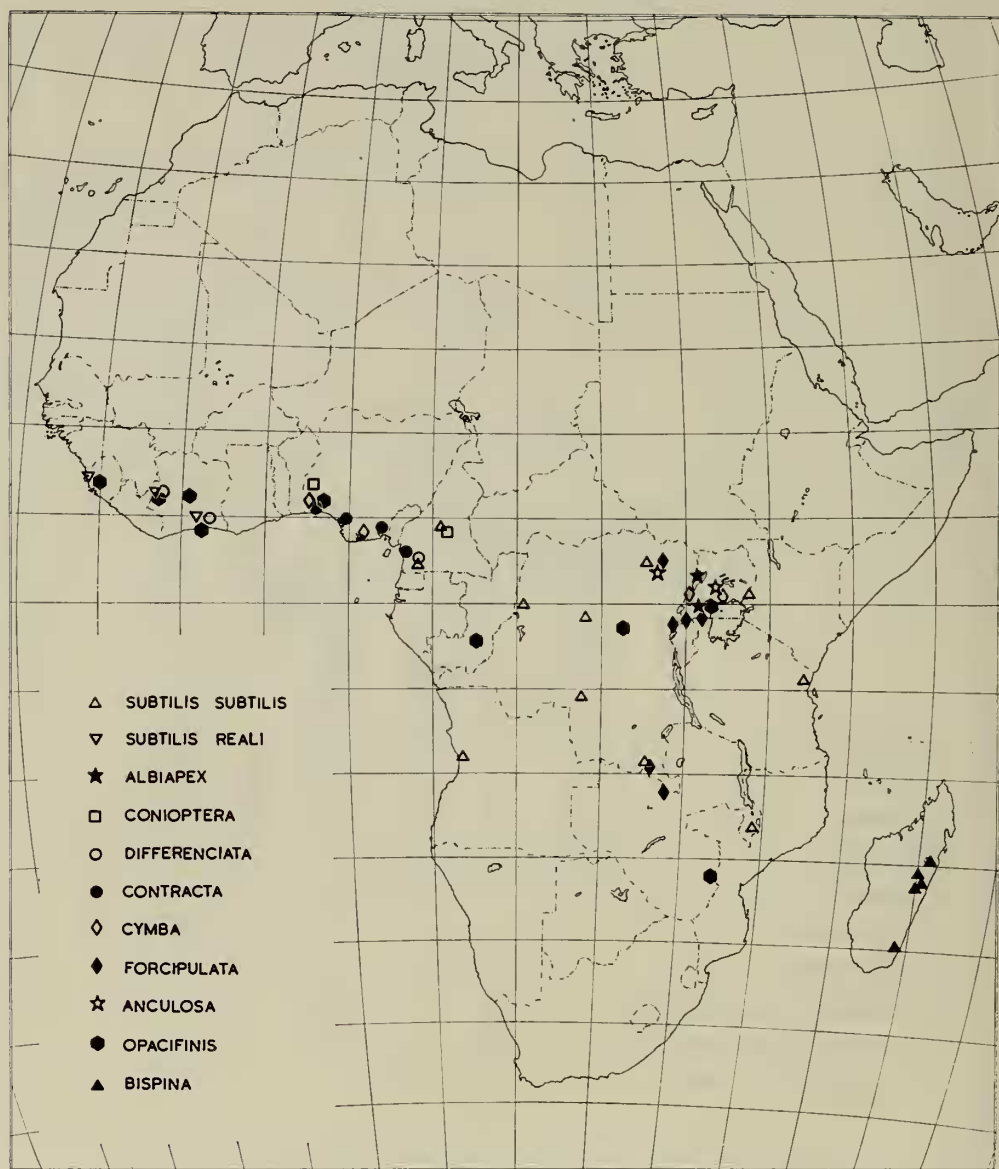
MAP I. Distribution of *Epicampoptera*, species-group *strand*i.

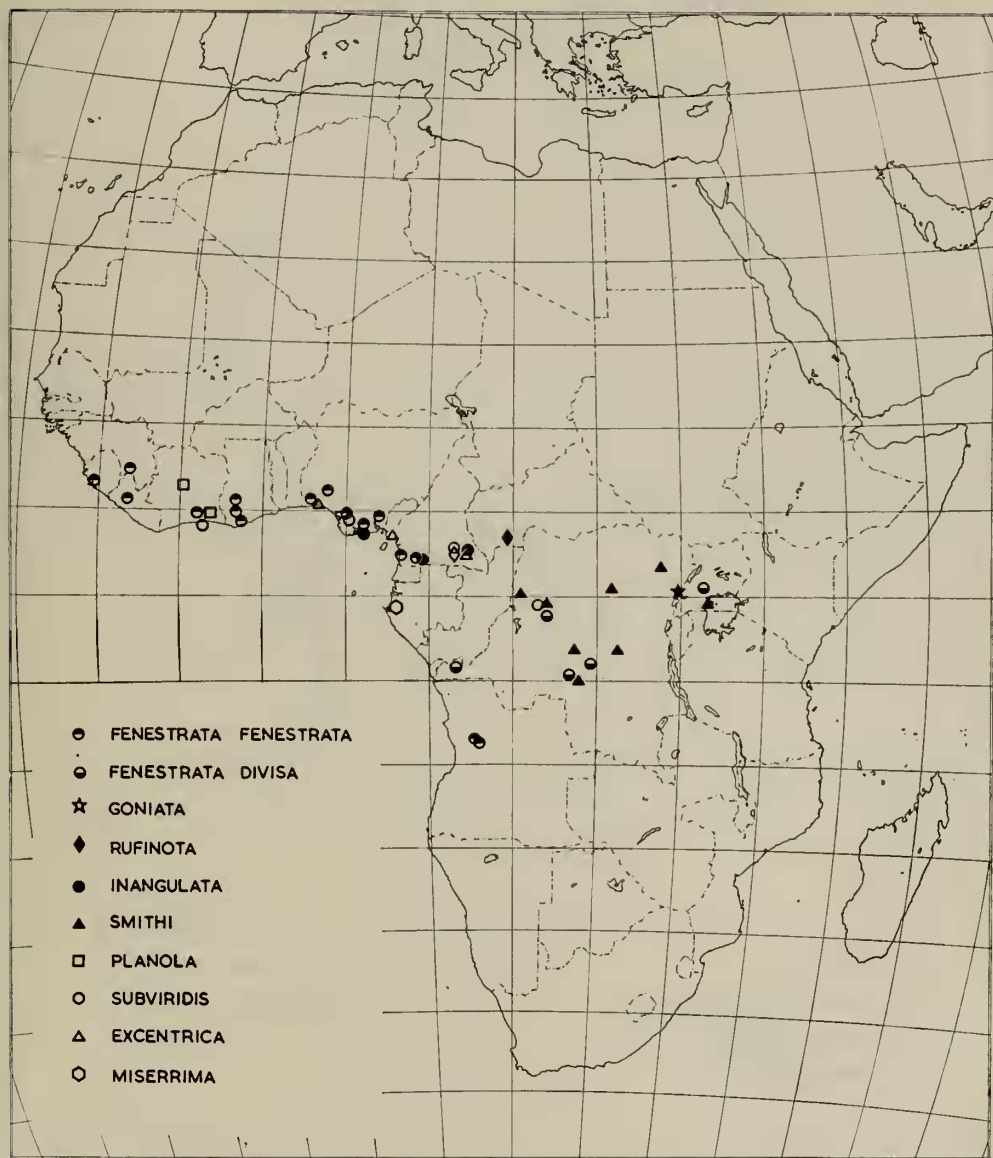


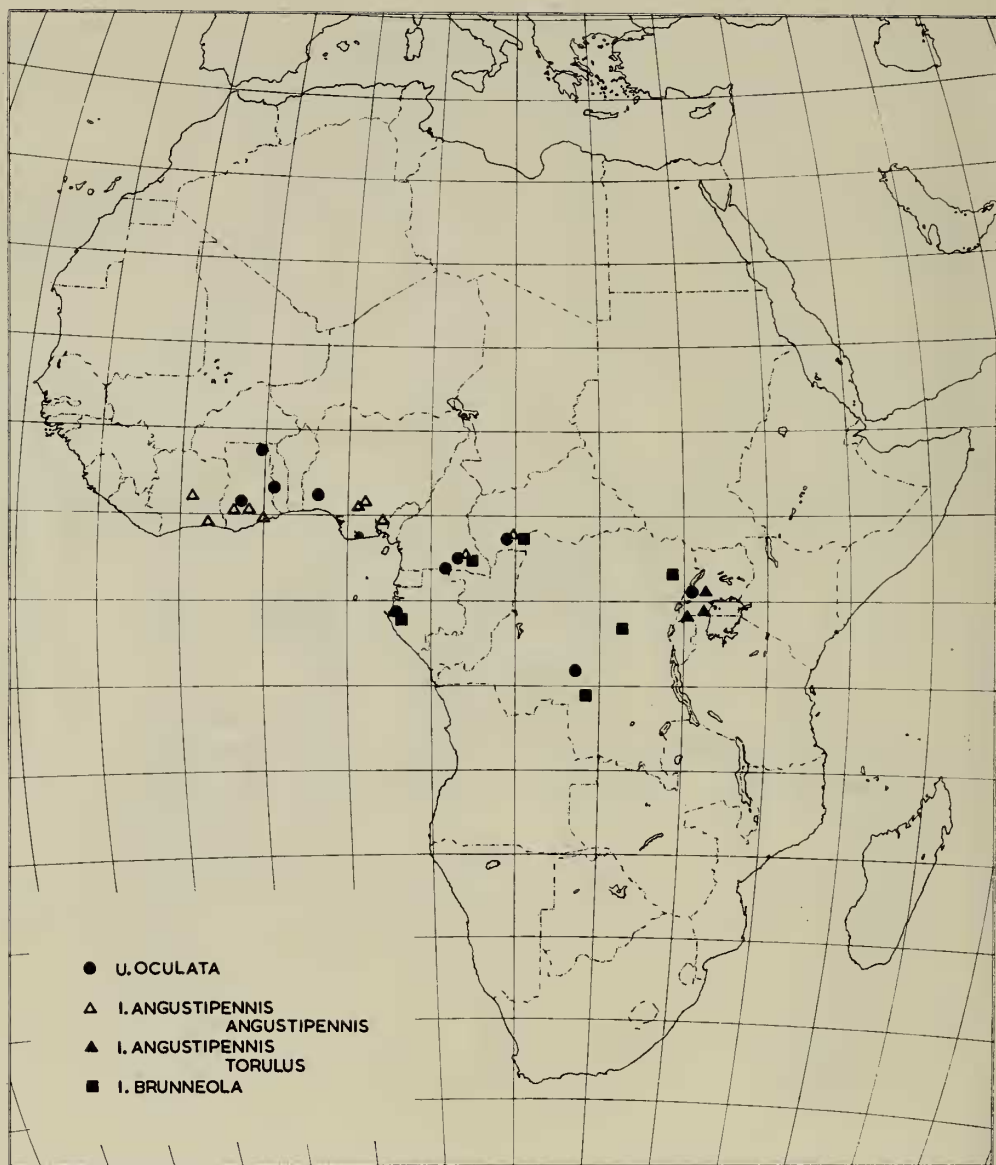
MAP 2. Distribution of *Epicampoptera*, species-group *erosa*.

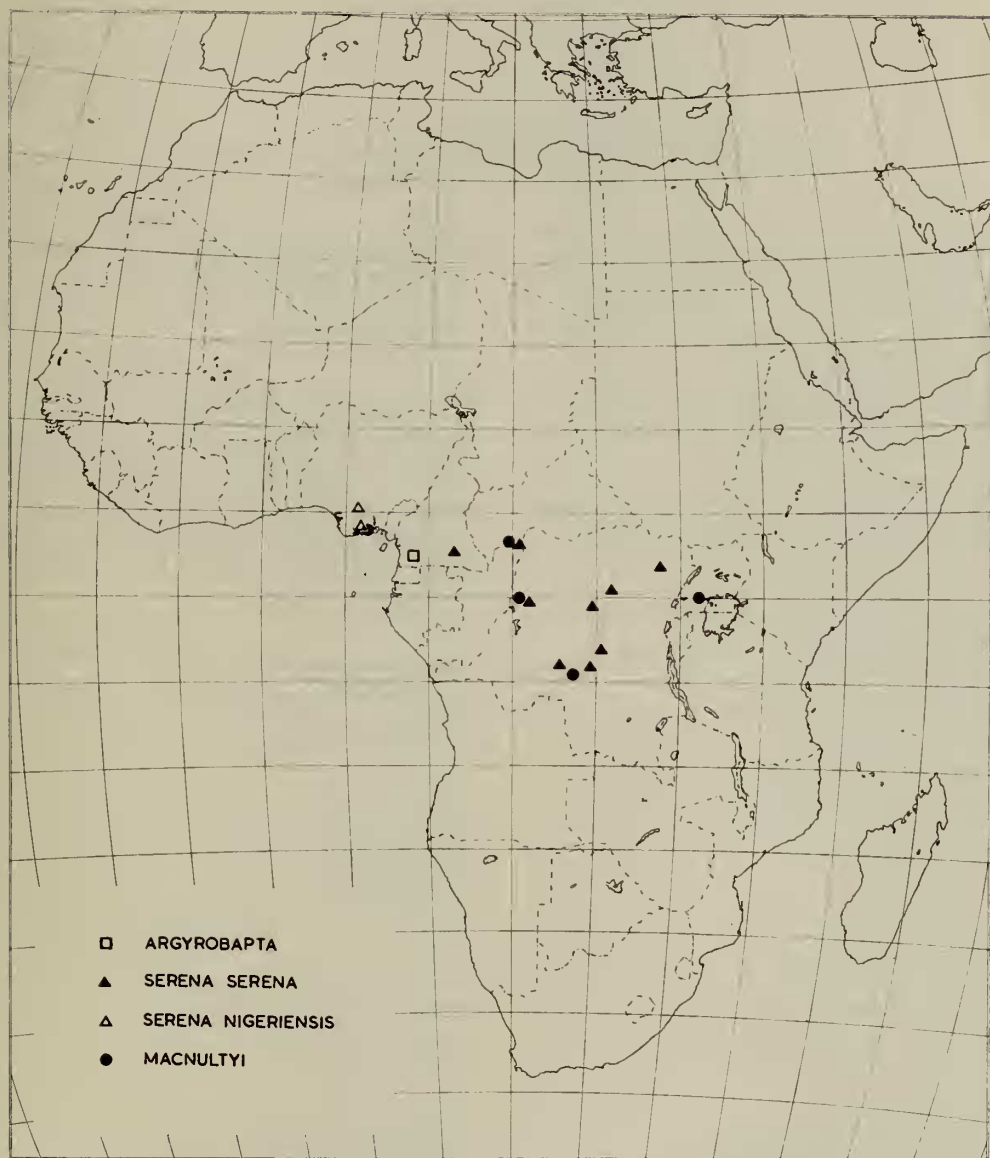
MAP 3. Distribution of *Negera*.



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PLATE I

*Epicampoptera*

FIGS. 271 and 272, *strandi strandi*, ♂, ♀ (B.M. negative Nos. 31119, 31118).  
FIGS. 273 and 274, *andersoni*, ♂, ♀ (B.M. negative Nos. 31120, 31092). (× 2)

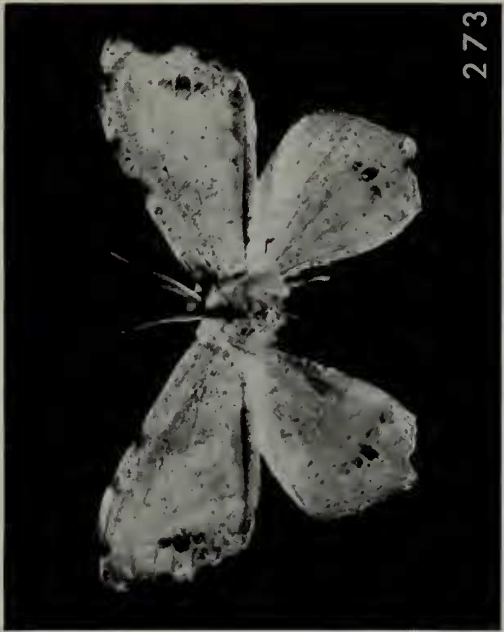


PLATE 2

*Epicamptoptera*

FIG. 275, *marantica*, ♂ (B.M. negative No. 31104). FIG. 276, *difficilis*, ♂ lectotype (B.M. negative No. 31100). FIG. 277, *tamsi*, ♂ holotype (B.M. negative No. 31091). FIG. 278, *seydeli*, ♂ holotype (B.M. negative No. 31045). ( $\times 2$ )





PLATE 3

*Epicamptoptera*

FIG. 279, *carnea*, ♂ (B.M. negative No. 31114). FIG. 280, *griveaudi*, ♀ paratype (B.M. negative No. 31117). FIG. 281, *graciosa*, ♀ holotype (B.M. negative No. 31089). FIG. 282, *notialis*, ♂ paratype (B.M. negative No. 31090). ( $\times 2$ )



PLATE 4

*Epicamptoptera*

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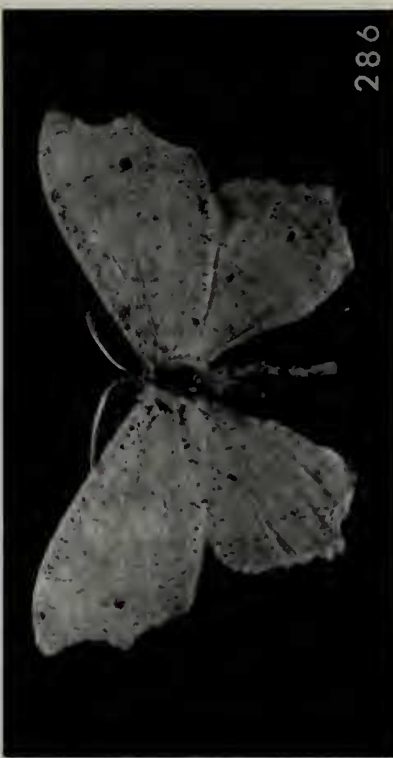


PLATE 5

*Negera*

FIGS. 287-289, *quadricornis*, ♀ paratype, ♂ holotype, ♂ paratype (B.M. negative Nos. 31094, 36779, 36780). FIG. 290, *disspinosa*, ♂ paratype (B.M. negative No. 31095). (× 2)



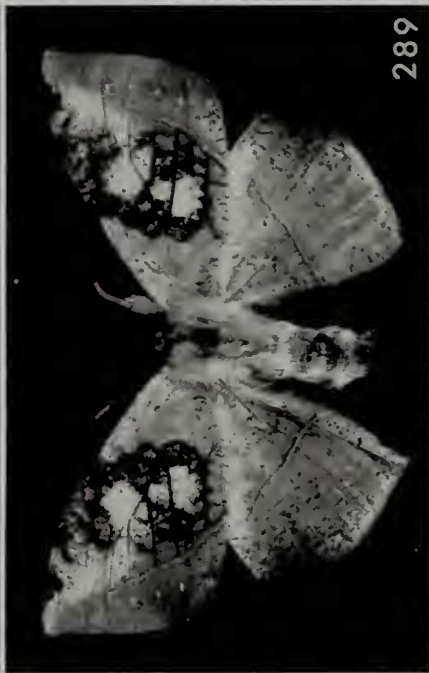
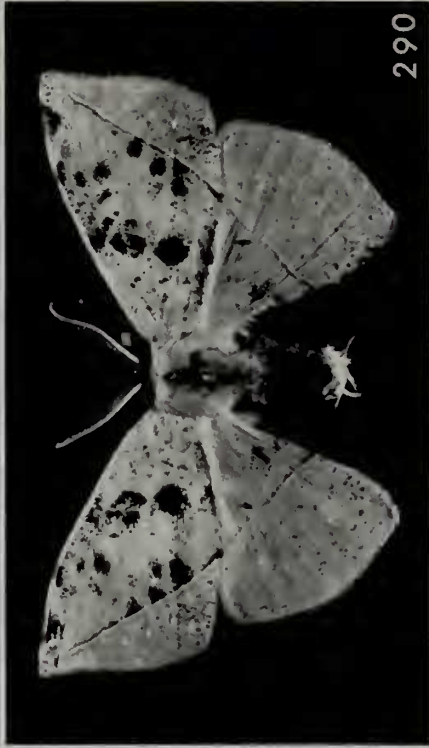


PLATE 6

*Negera*

FIGS. 291 and 292, *bimaculata*, ♂ (holotype of *immaculata*), ♀ (B.M. negative Nos. 22660, 31093). FIG. 293, *unispinosa*, ♀ paratype (B.M. negative No. 29583). FIG. 294, *natalensis natalensis*, ♂ (B.M. negative No. 31096). (× 2)

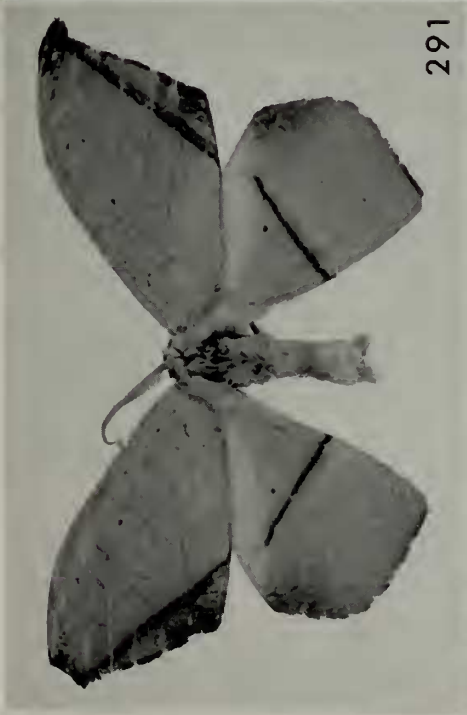


PLATE 7

*Gonoreta*

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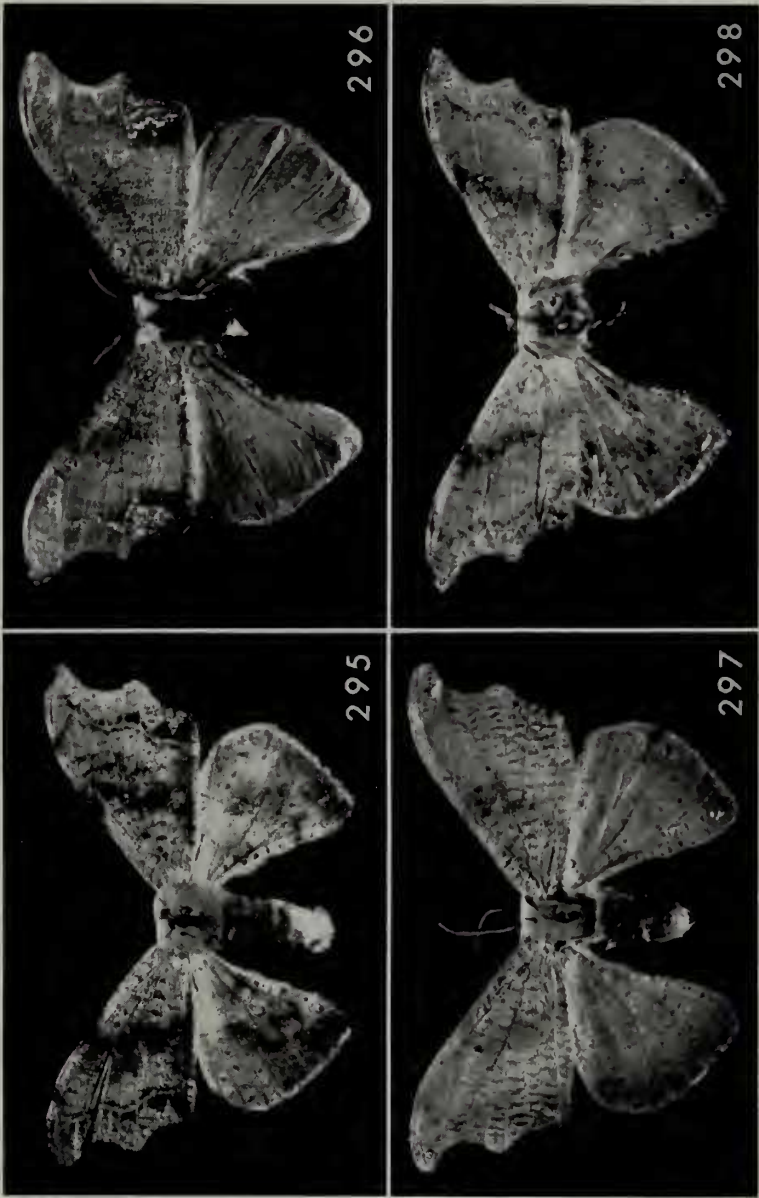




PLATE 8

*Gonoreta*

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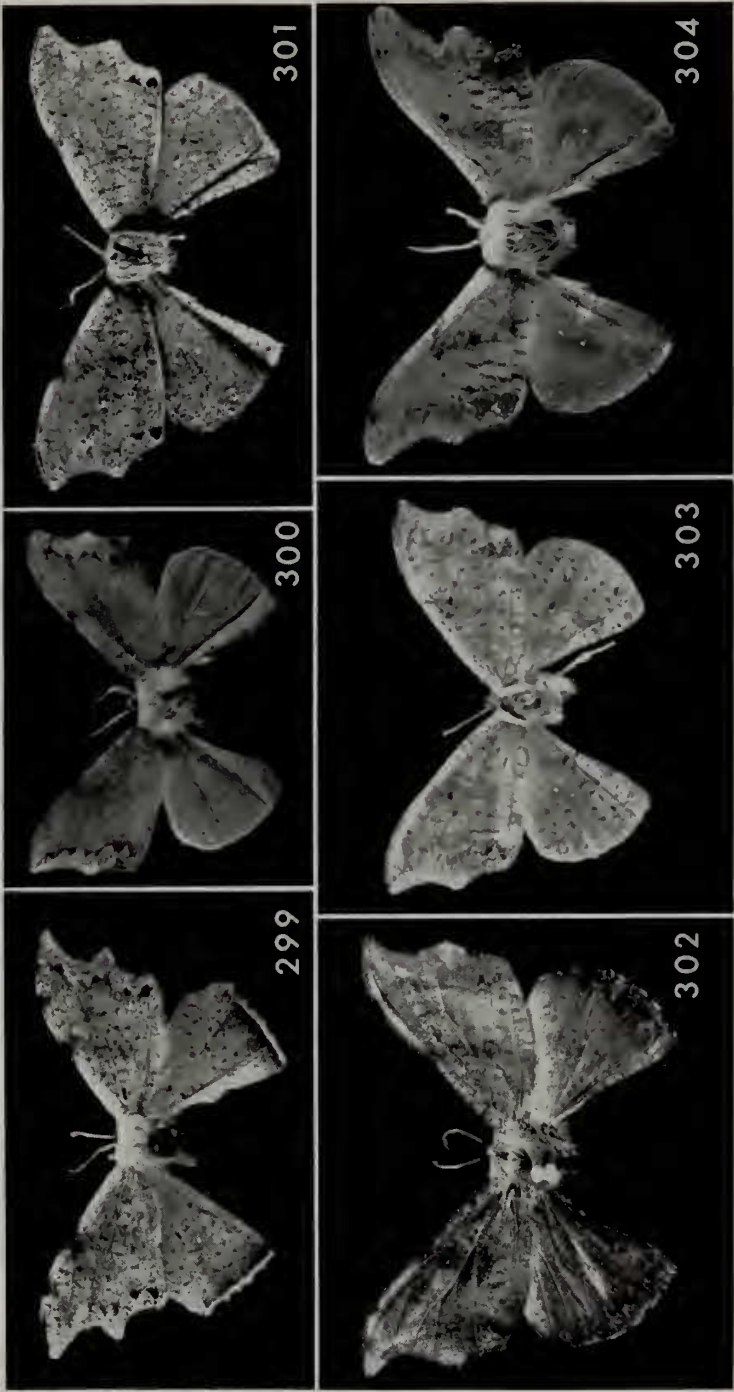


PLATE 9

*Spidia*

FIG. 305, *smithi*, ♂ (B.M. negative No. 31028). FIG. 306, *inangulata*, ♂ holotype (B.M. negative No. 31079). FIG. 307, *subviridis*, ♀ (B.M. negative No. 31076). FIG. 308, *excentrica*, ♀ (B.M. negative No. 31077). (× 2)

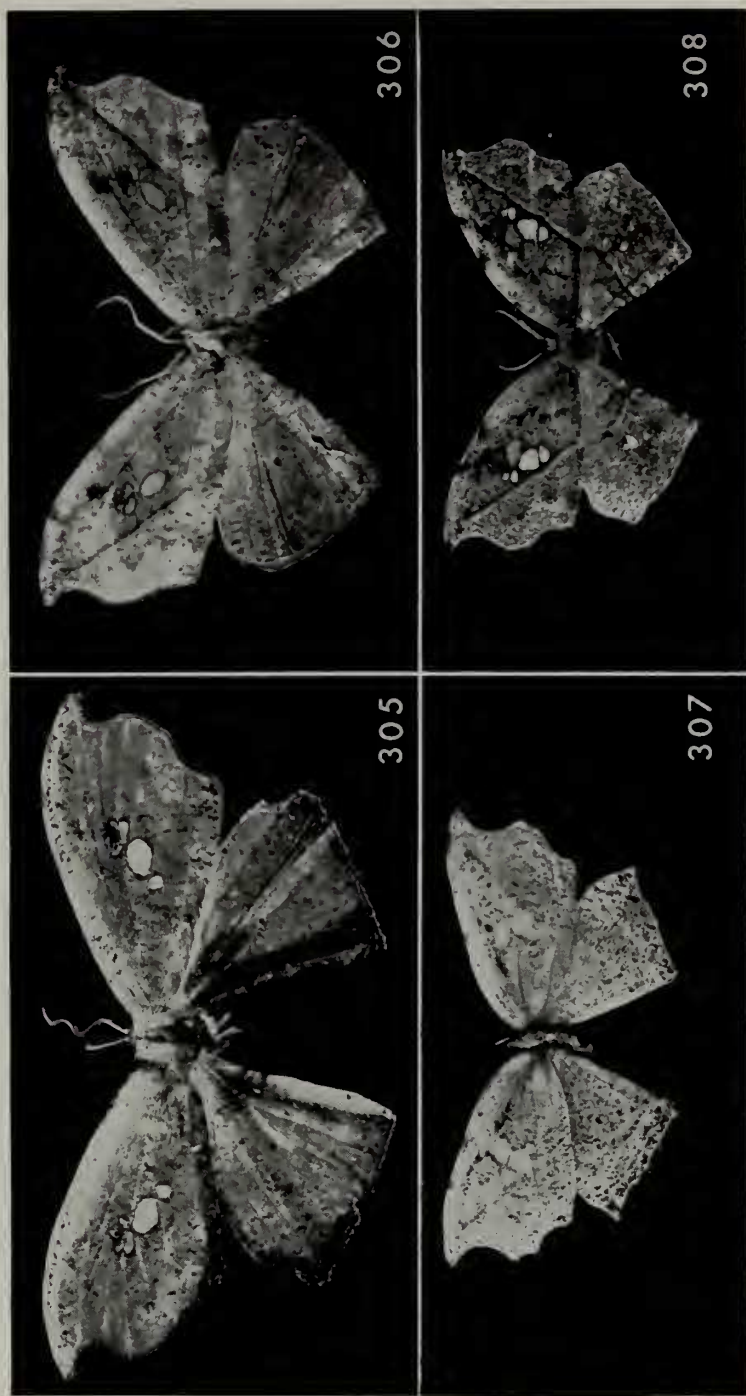


PLATE 10

*Spidia*

FIG. 309, *excentrica*, ♂ (B.M. negative No. 31075). FIG. 310, *rufinota*, ♂ holotype (B.M. negative No. 31080). FIG. 311, *fenestrata fenestrata*, ♂ (B.M. negative No. 31097).

*Uranometra*

FIG. 312, *oculata*, ♀ (B.M. negative No. 31099). ( $\times 3$  : FIGS. 309, 310 ;  $\times 2$  : FIGS. 311, 312)



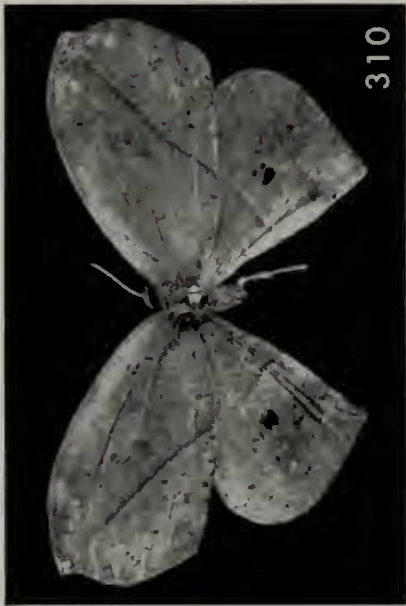


PLATE 11

*Crocinis*

FIG. 313, *canescens*, ♂ holotype (B.M. negative No. 31064). FIG. 314, *imaitsoana*, ♂ holotype (B.M. negative No. 31050). FIG. 315, *fenestrata*, ♂ holotype (B.M. negative No. 31097). FIG. 316, *felina*, ♂ holotype (B.M. negative No. 31056). ( $\times 2$  : FIGS. 313, 314, 316 ;  $\times 3$  : FIG. 315)

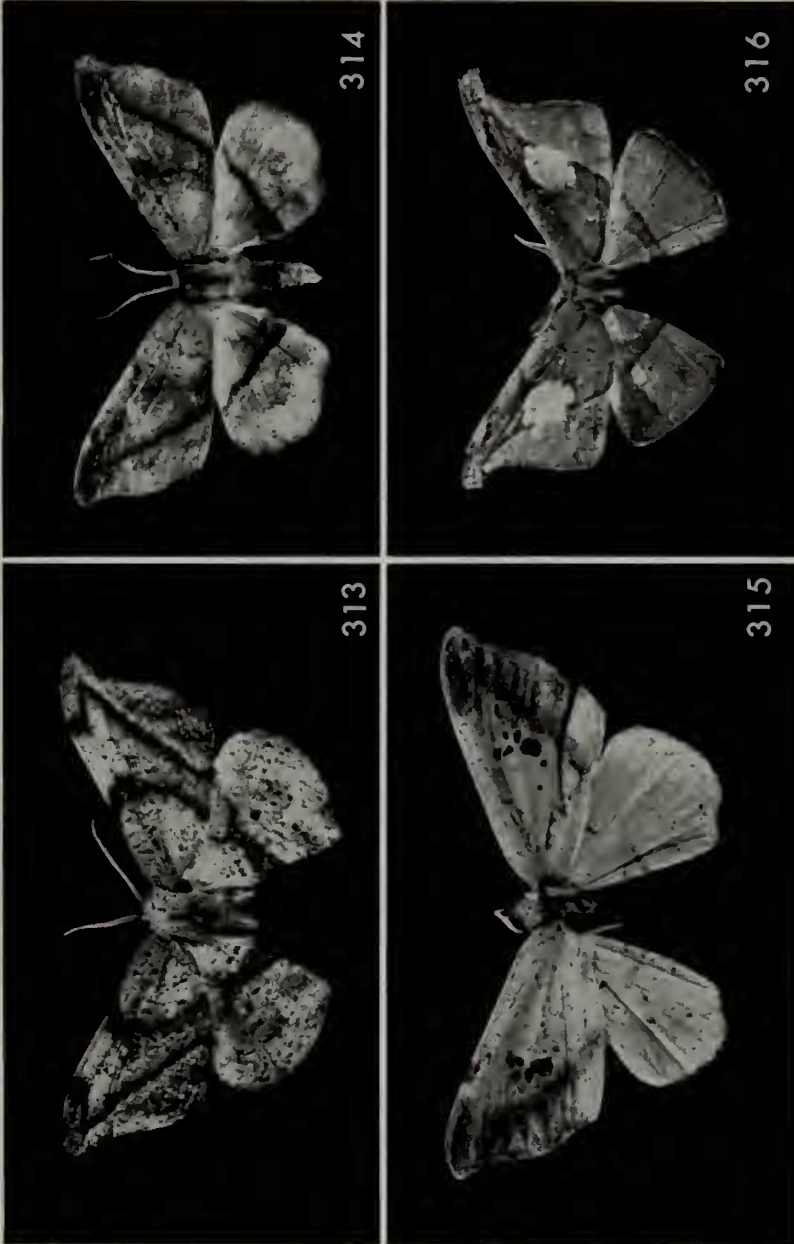


PLATE 12

*Crocini*

FIGS. 317 and 318, *viettei*, ♂ paratype, ♂ holotype, (B.M. negative Nos. 31062, 31061). FIG. 319, *prolixa*, ♂ holotype (B.M. negative No. 31060). FIG. 320, *boboa*, ♂ holotype (B.M. negative No. 31105). (× 3 : FIGS. 317-319 ; × 2 : FIG. 320)

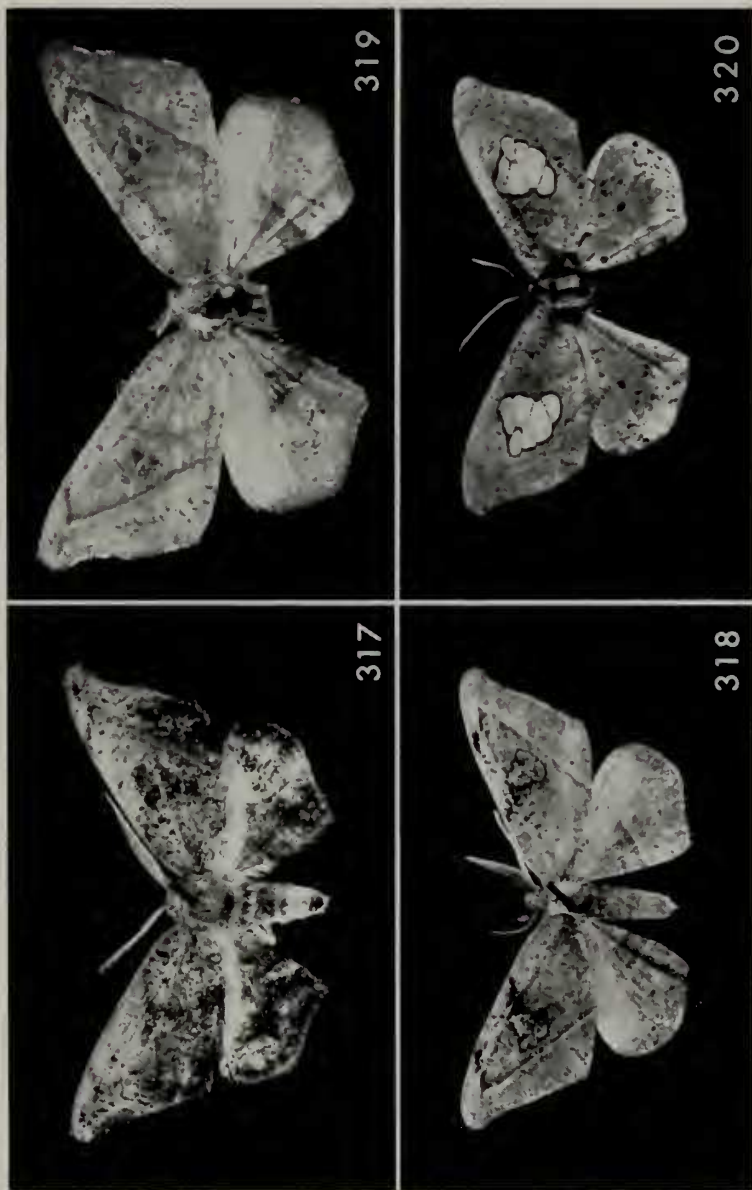




PLATE 13

*Crocini*

FIGS. 321 and 322, *spicata*, ♂ holotype, ♂ paratype (B.M. negative Nos. 31106, 31101). FIG. 323, *licina*, ♂ holotype (B.M. negative No. 31115). FIG. 324, *tetrathyra*, ♂ (B.M. negative No. 31063). FIG. 325, probably either *spicata* or *licina*, ♀ (B.M. negative No. 31107). (× 2 : FIGS. 321-323, 325 ; × 3 : FIG. 324)



PLATE 14

*Isospidia*

FIGS. 326-328, *angustipennis angustipennis*, ♀ holotype of *Oreta glaucinoe*, ♂, ♂ (B.M. negative Nos. 31066, 31067, 31068). FIG. 329, *angustipennis torulus*, ♂ holotype (B.M. negative No. 31069). FIG. 330, *brunneola*, ♀ (B.M. negative No. 31070). ( $\times 2$ )



PLATE 15

*Archidrepana*

FIGS. 331-333, *saturniata*, ♂, ♂, ♀ holotype (B.M. negative Nos. 31058, 31057, 31109). ( $\times 2$ )



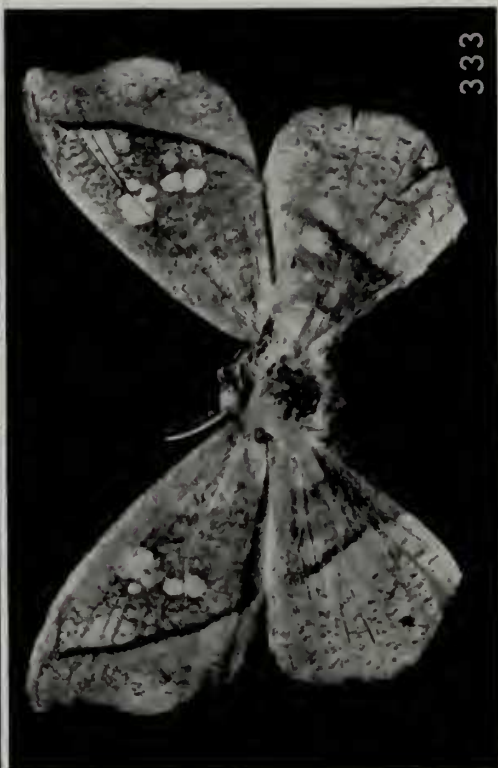


PLATE 16

*Callidrepana*

FIGS. 334 and 335, *macnultyi*, ♂ holotype, ♀ (B.M. negative Nos. 31071, 31072).  
FIG. 336, *argyroabpta*, ♂ lectotype (B.M. negative No. 31121). FIG. 337, *serena*  
*nigeriensis*, ♂ holotype (B.M. negative No. 31074). FIG. 338, *serena serena*, ♂  
lectotype (B.M. negative No. 31073). ( $\times 3$ )



PLATE 17

FIG. 339, *Oretopsis vohilava*, ♂ (B.M. negative No. 31108). FIG. 340, *Nidara multiversa*, ♂ holotype (B.M. negative No. 31111). FIG. 341, *Gonoretodes timea*, ♂ holotype (B.M. negative No. 36778). FIG. 342, *Epicamptoptera efulena*, ♂ holotype (B.M. negative No. 34518). ( $\times 2$ )





PLATE 18

*Nidara*

FIGS. 343 and 344, *calligola*, ♂ paratype, ♂ holotype (B.M. negative Nos. 31052, 31051). FIGS. 345 and 346, *marcus*, ♂ paratype, ♂ holotype (B.M. negative Nos. 31053, 31054). FIG. 347, *croceina*, ♂ lectotype (B.M. negative No. 31055). FIG. 348, *pumilla*, ♂ holotype (B.M. negative No. 31098). (× 2)

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